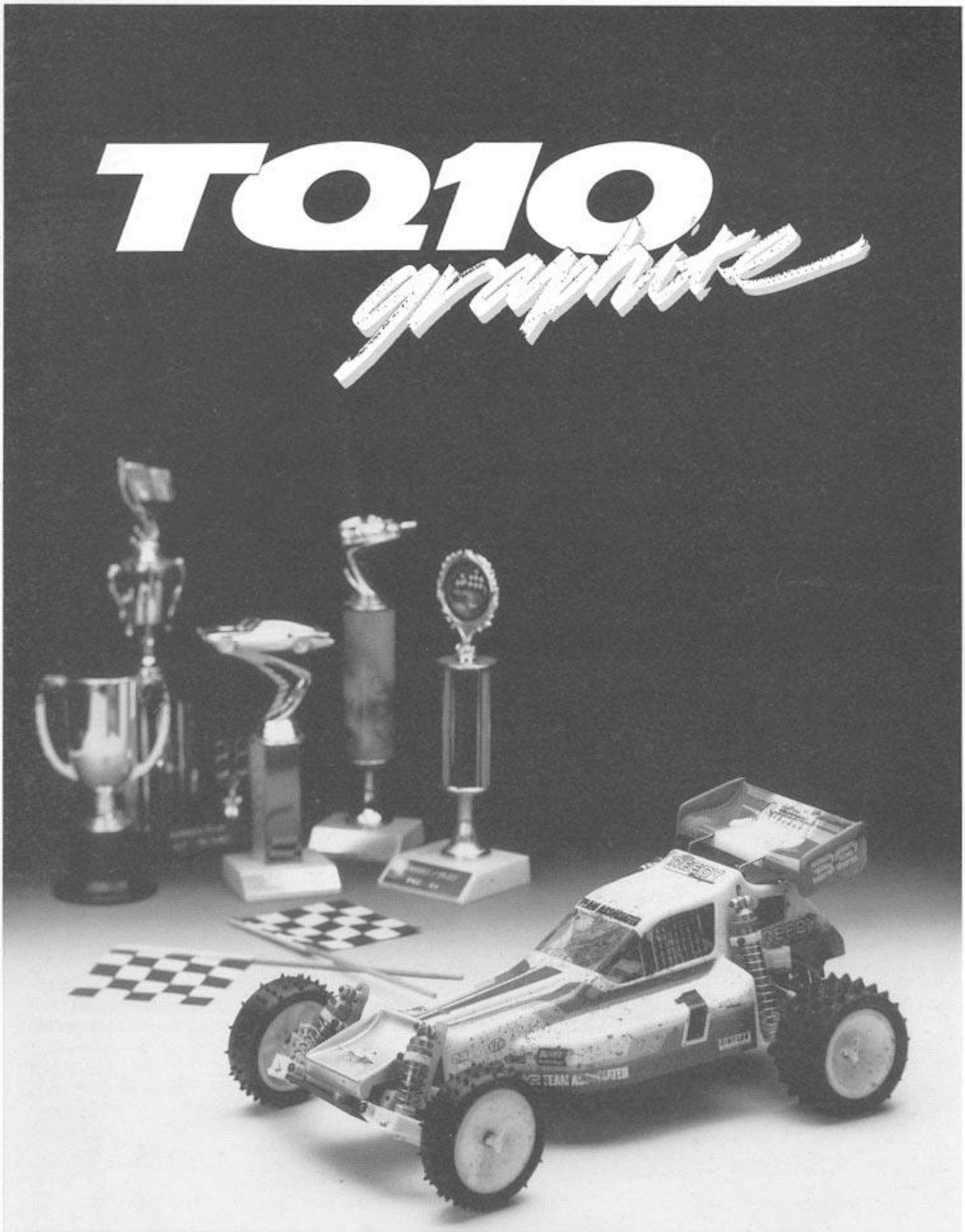
TQ10 graphite

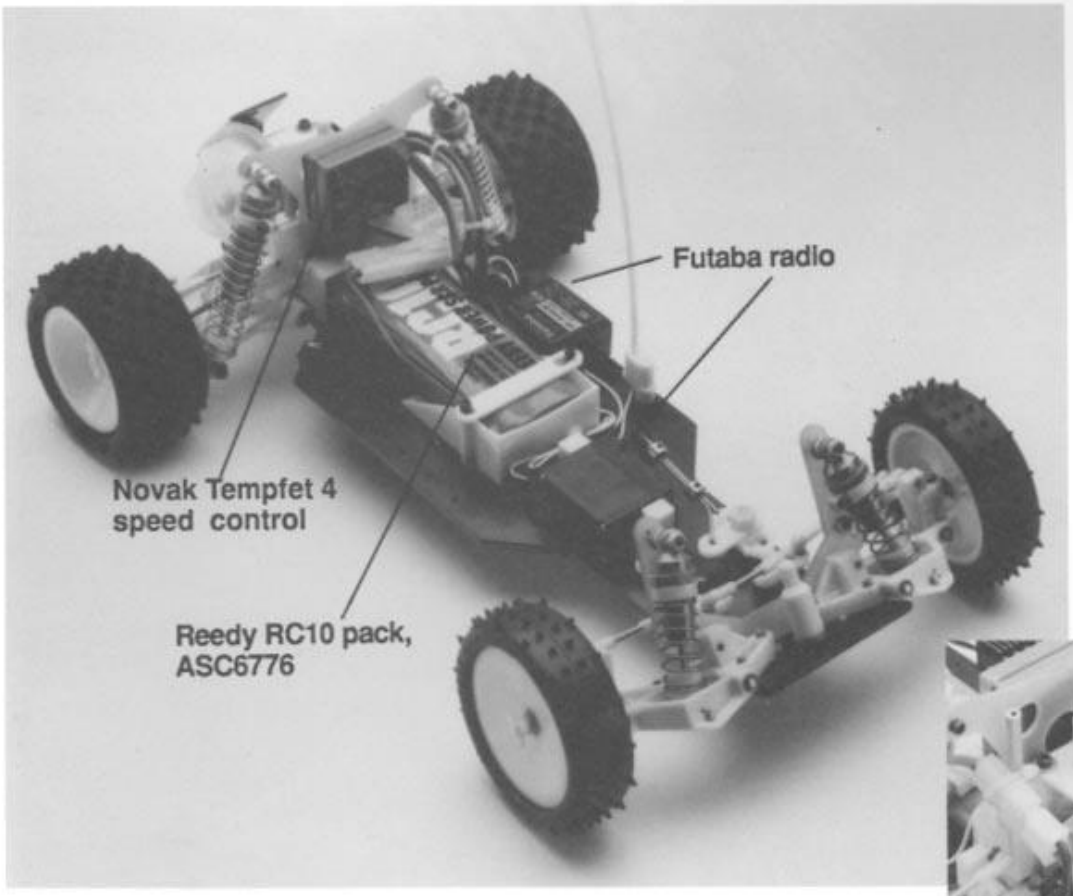


TEAM ASSOCIATED

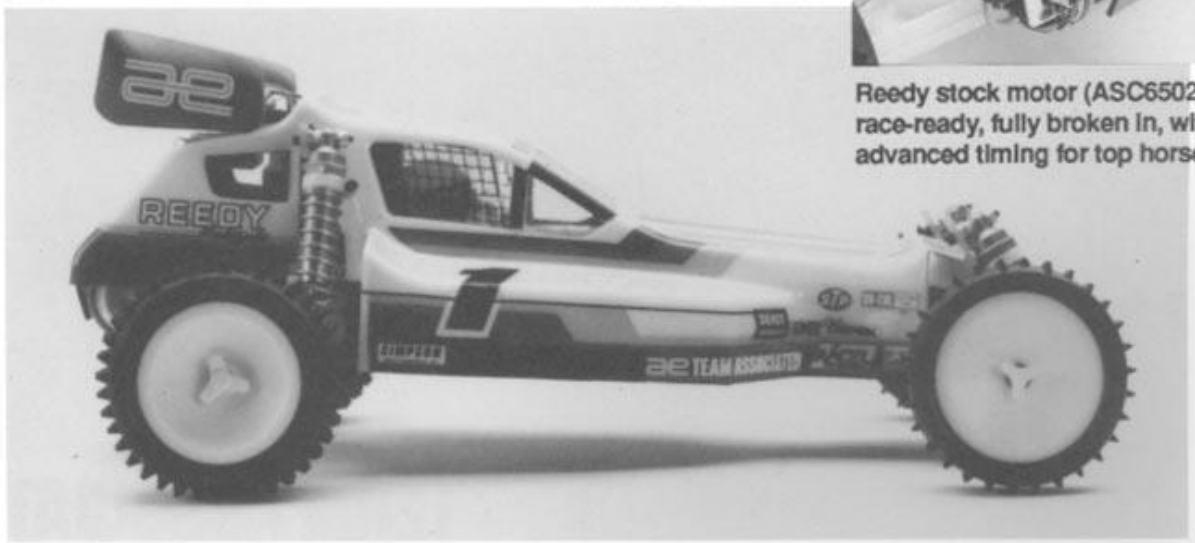
TQ10 graphite

The perfect stock set-up

Build it like this for race winning performance.



Reedy stock motor (ASC6502) is race-ready, fully broken in, with advanced timing for top horsepower.



TQ 10 OFF-ROAD BUGGY

ASSEMBLY AND OPERATING INSTRUCTIONS

Team Associated has won more National and World Championships, in more different classes, than any other car manufacturer in the world.

That's why Associated was commissioned by Horizon Hobby Distributors, a national distributor serving hobby retailers nationwide, to produce a very special race car. Based ont he RC10, the most popular off-road car ever produced, the TQ10 takes the RC10 one step further with its graphite chassis, TQ wheels and tires and racer style kit that leaves the selection of motor, battery and speed control up to you.

We feel you have the best 1/10 scale offroad car available, anywhere. You'll find the photos in the instructions are so easy to follow, that many of you may be tempted to put the car together from the photos alone. However, although you have the best car kit, ***if you want the best completed model race car***, then you will want to put it together correctly, using these instructions. All that's required is to ***read the few lines of text across from each photo***.

Whatever you do, DON'T OPEN UP ANY OF THE PARTS BAGS until these instructions tell you, otherwise you'll get the parts mixed up and then you will definately be in trouble assembling your car.

While you are building the car you will sometimes be working with several parts bags at the same time. These bags are referred to by number in the instructions, and you will find a number label on each of the main parts bags. There are also more bags inside the main parts bags but these are not numbered and belong to the bag they came out of. See page 44 for the list of parts and bags in your kit.

As you can see, bags and parts will start multiplying like rabbits as you build, so try to keep things separate. One good way is to use large paper plates (picnic plates with partitions are even better). Mark the plates with bag numbers and dump the parts into them. When the parts are used up relabel the plate for another bag. It's much easier to find the part you need if it's spread out where you can see it.

TOOLS: The kit contains all of the Allen wrenches you'll need, but you will have to supply the following tools:

-Phillips #2 screwdriver (Associated #SP76).
-Small pliers, almost any kind will do.
-A hobby knife.
-A soldering iron (25 to 50 watts), and a small amount of ROSIN core 60/40 solder.

Also, the kit can be assembled a lot easier if you have some of the following tools. A 3/32" straight Allen wrench with handle, will make installing the Allen screws much faster and easier (Associated #SP73). A 3/16" nut driver will make installing the ball ends easier (Associated #SP86) and a 1/4" nut driver will speed up installing the 1/4" nuts (#SP85).

Warning! Do not use a power screwdriver. They spin too fast causing screws to heat up when being driven into plastic, and will strip out.

Take your time assembling the car. It's not a race to see how fast you can put the car together. Rather it's how well you put it together that determines how fast you'll be able to race.

It would be a good idea to put a check mark at each assembly step number on these instructions after they're completed. That way, when you have to stop during assembly time, you'll be able to come back and start in the correct step.

One final note for you experienced builders and racers: please build the car ***our way first!!*** The TQ10 is a remarkably fast car right out of the box. There's a reason for everything on the car, and very few compromises were made in its design. Work with the car first and see what it can do before you experiment or make changes.

Clear off your workbench, line up some paper plates, grab a sandwich, and let's begin...

-1- In bag #65, take one #6330 body mount, 2 washers and one short screw. (The long screw is used to extend the body mounts for other body styles.)

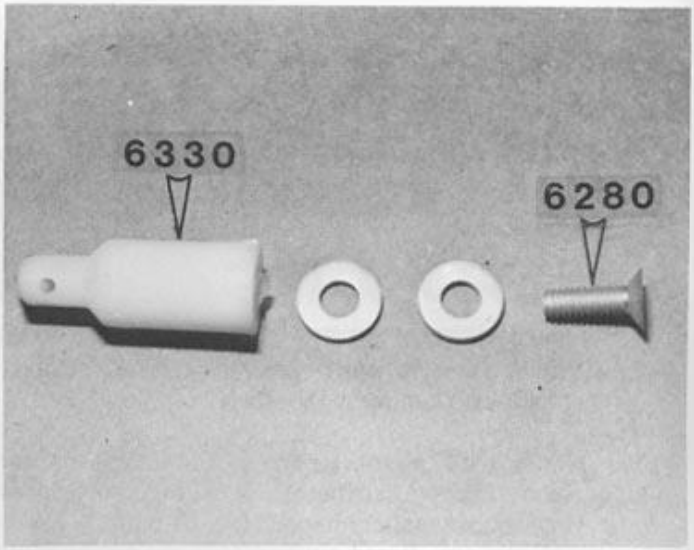


Fig. 1

-2- Install body mount as shown with body clip hole going left to right.

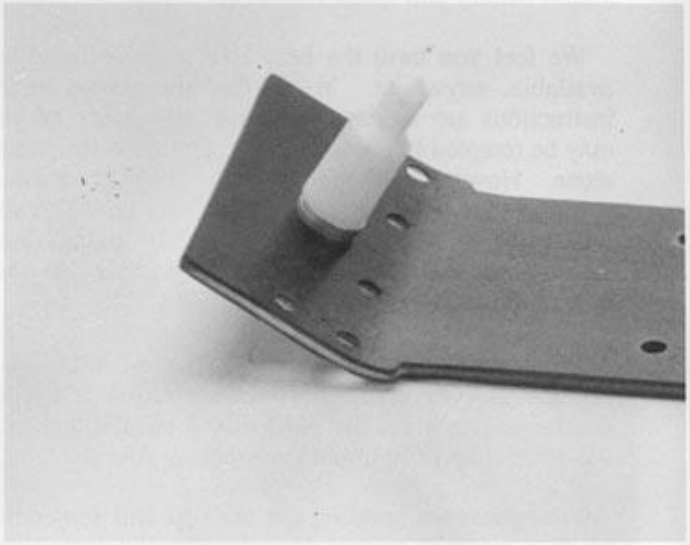


Fig. 2

-3- In bag #61, take out the left hand front suspension mount #6207. This mount will have the letter "L" on the bottom. The left or right hand side of the car is determined by the driver as he sits in the car. His left hand will be the left side of the car and his right hand the right side.

NOTE: The left and right front suspension mounts are attached together by a thin "runner" that must be trimmed.

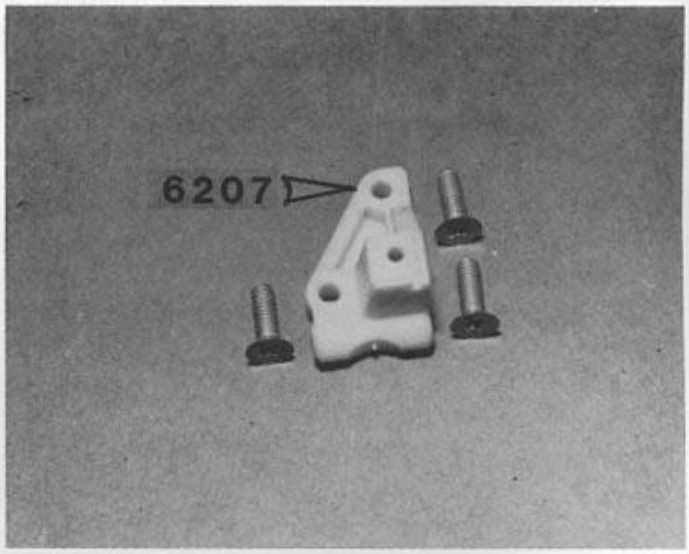


Fig. 3

-4- Install the L.H. suspension mount, as shown, with the 3 Phillips screws. Now, install the right hand mount.

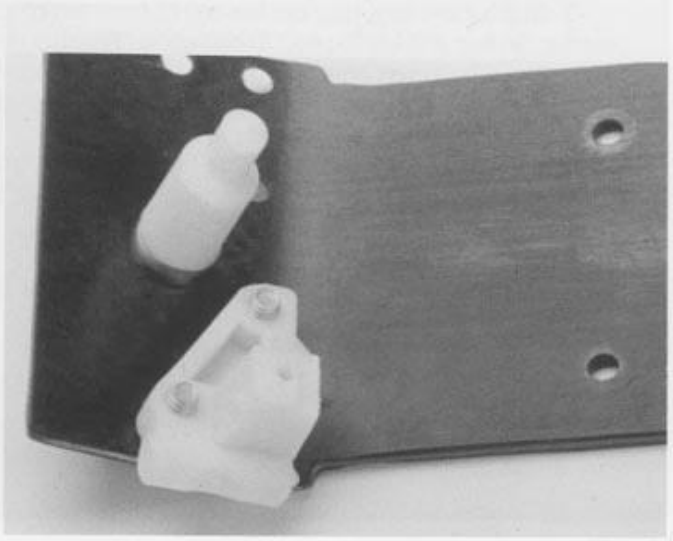


Fig. 4

-5- In the same bag, take out the #6205 L.H. front A-arm, the #6226 inner pin and the package of "E" clips, as shown.

NOTE: The package of "E" clips is in the form of a "stack" or short roll with white paper glued around the outside (see Fig. 5a). There is a roll of "E" clips in three different bags. You will have more than enough to complete your car.

Fig. 5a

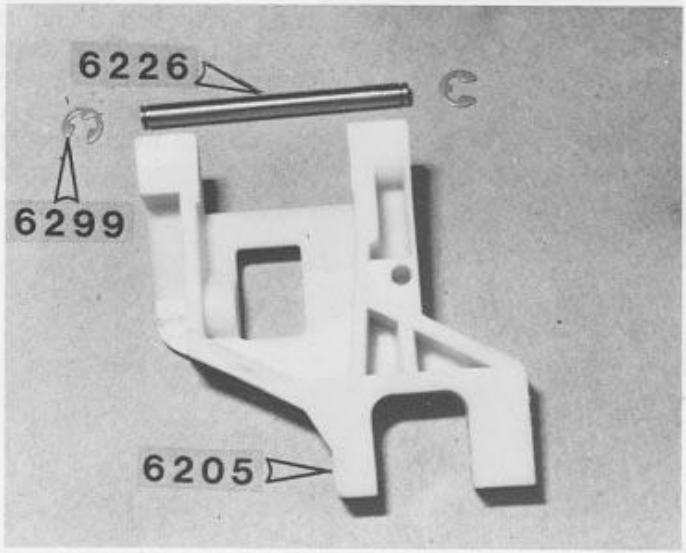


Fig. 5

-6- Line up the A-arm with the mount and push the pin through. Using a small screwdriver, install an "E" clip on each end of the pin. Now, install the R.H. sided.

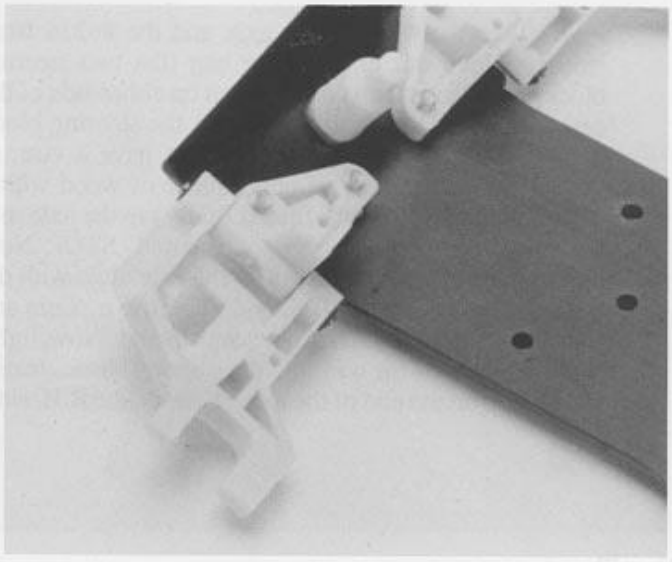


Fig. 6

-7- In the same bag, take out the #6213 front left block carrier. In bag #614 is the #6270 ball ends. Take out one of the metal ball ends only. Using the 3/16" nutdriver, or whatever tool you have, install the ball end in the block, as shown. Take the #6227 outer pin out of the bag.

NOTE: There are left and right block carriers, and they are marked "L" and "R" on the side you can't see in Fig.7.

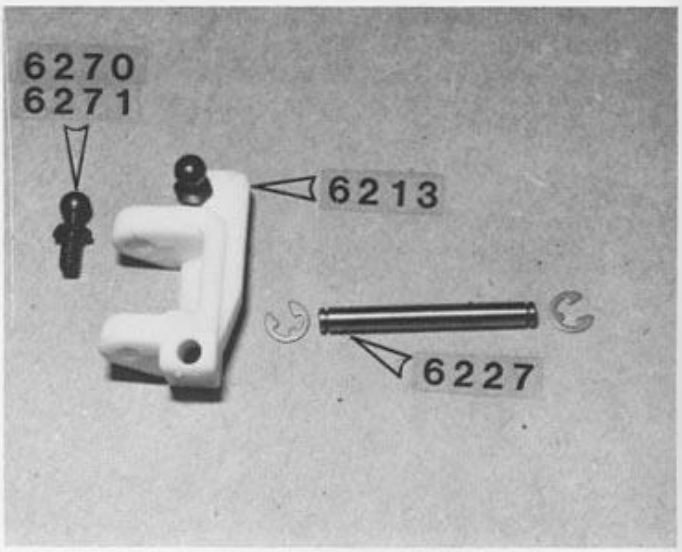


Fig. 7

-8- Line up the block carrier in the left A-arm, as shown, and push the pin through. Install the 2 "E" clips. Install the R.H. block. The block carrier is intentionally tight on the pin, but the pin should swivel freely in the A-arm. Do not attempt to enlarge this hole in the block carrier. If you run out of "E" clips there are plenty in the shock bags.

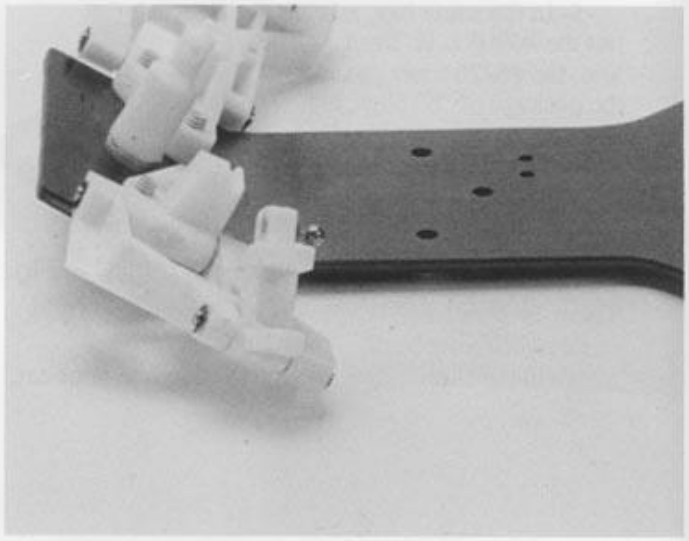


Fig. 8

-9- Take the #6219 front axle and the #6216 front steering block out of the same bag (the two steering blocks are identical and can be used on either side of the car). We want to install the axle in the steering block without damaging the plastic. If you have a vise, as shown, you can use it. If not, a piece of wood with a 3/16" hole in it will work fine. Lightly tap the axle into the block. As soon as you've got it started - STOP. Now check to see if the 6 flat spots on the axle align with the flat sides in the block. If they do not, use a pliers and rotate the axle until the flat spots are aligned. Now, lightly tap the axle all the way into the steering block. Install an "E" clip on the end of the axle. Now do the R.H. side.

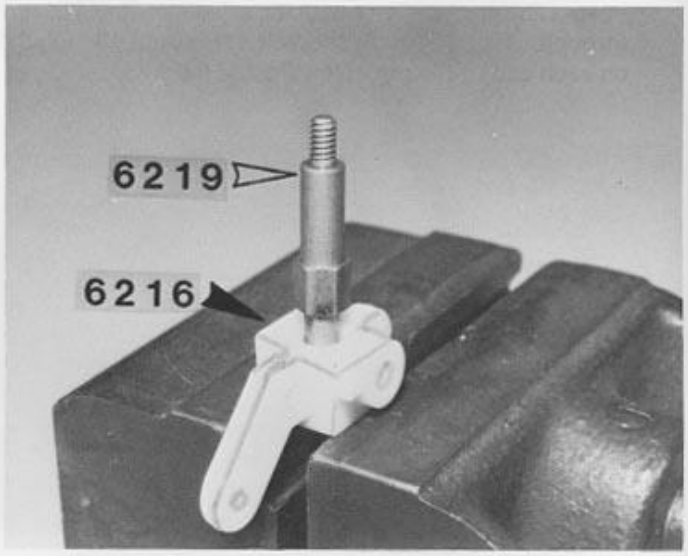


Fig. 9

-10- Install a ball end in the L.H. steering block as shown and put a plain 4/40 nut on the ball end (both from bag 614), on the bottom of the steering arm. Take the #6223 kingpin out of bag 61.

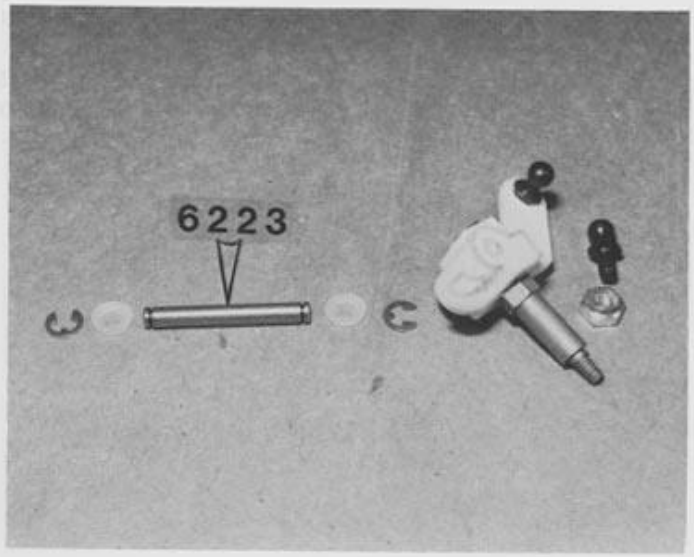


Fig. 10

-11- Line up the steering block in the block carrier, as shown, and push the kingpin through. Now, install "E" clips on the top and bottom ends of the pin. If you run out of "E" clips, there are extras in the shock bags. Install the R.H. steering block.

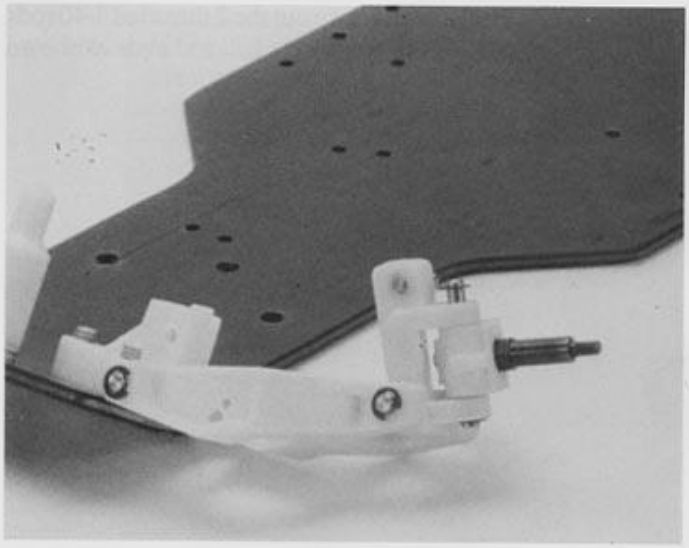


Fig. 11

-12- Take the #6230 front shock strut out of the same bag. You'll notice in the strut, there are 3 holes to mount the ball end in. Mount the ball end in the lower outside holes as shown. Put a plain 4/40 nut on the other side. Take the 2 4/40 X 1/2" Allen bolts out of the bag, as shown.

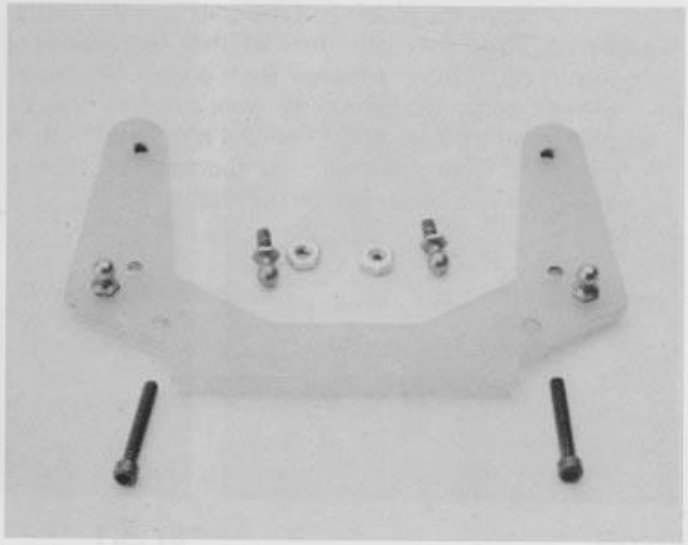


Fig. 12

-13- Install the shock strut onto the front suspension mounts with the 2 4/40 bolts as shown.

NOTE: If you have difficulty lining up the holes you can temporarily loosen the screws holding the mounts to the chassis, and then retighten them after the strut is installed.

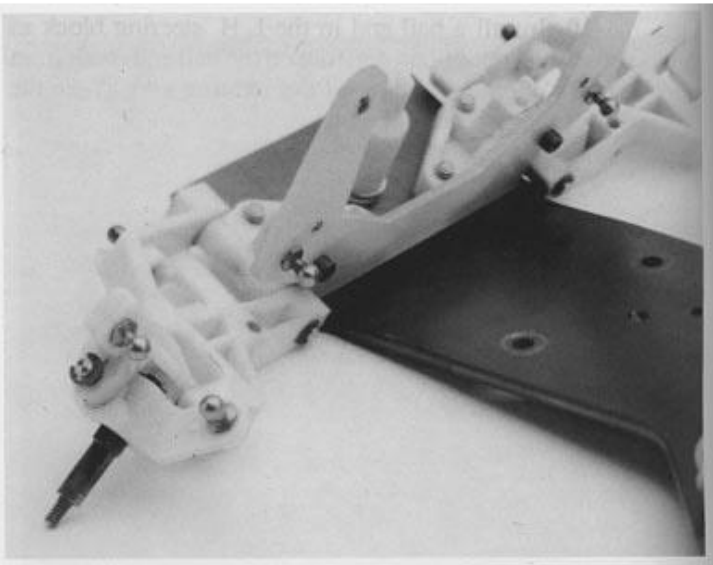


Fig. 13

-14- In the same bag, take out the 2 threaded 4/40 rods. In bag #614 take out the plastic ball rod ends as shown. Twist the rod ends, and take 4 of them off.

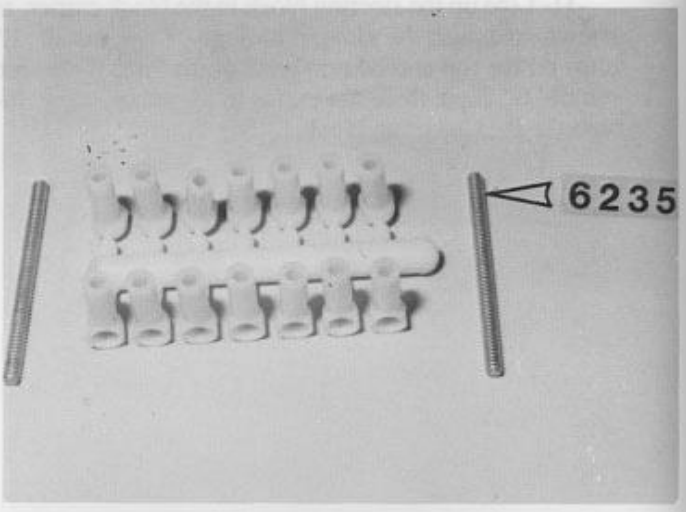


Fig. 14

-15- Screw the plastic ball rod ends onto the rods as shown. You'll be able to start them by hand, but you'll need 2 pliers to screw them down. Be careful not to damage the ends. We want to screw the rod ends on so they are 1.275" or 32.4 mm long. This is measured from the center of the ball, as shown. You'll notice a center line on the plastic ball.

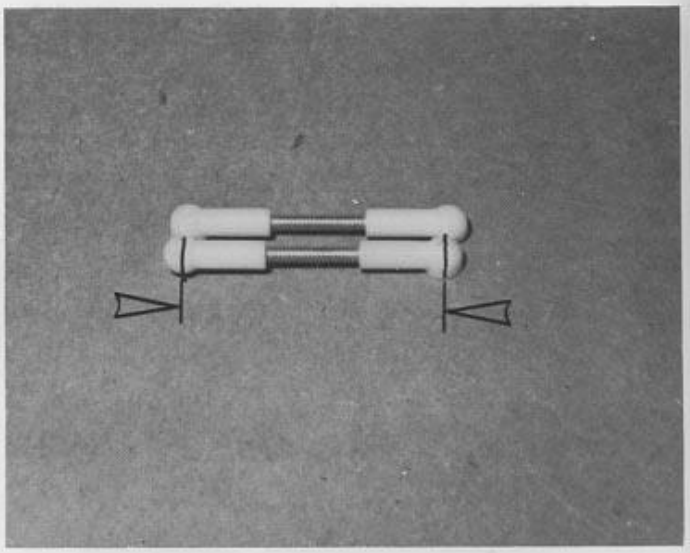


Fig. 15

-16- Snap the rods on the metal balls, as shown. You'll probably have to use pliers. Do the R.H. side.

From this point on you may see different locations for the ball link on the shock tower in the instructions. The position shown is correct and reflects the latest Associated technology. Other photos may show earlier set-up.

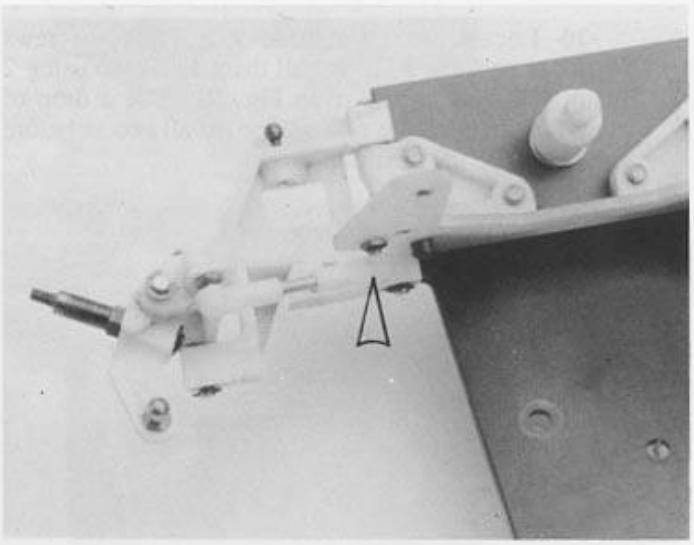


Fig. 16

-17-In bag #62, take the #6255 servo saver parts out, and install the 4 ball ends, as shown.

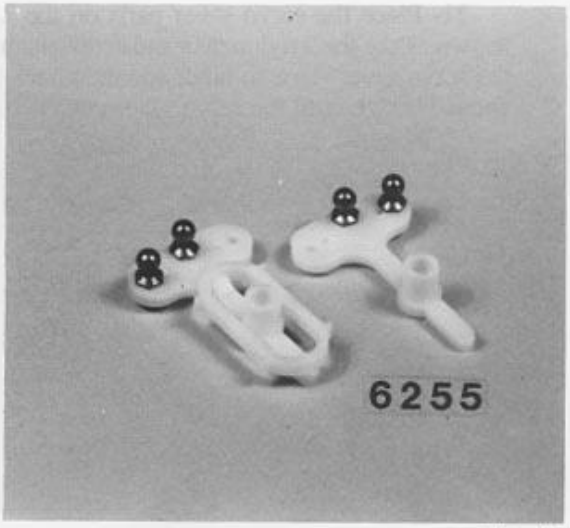


Fig. 17

-18- Locate the servo saver arm...

-19- and install it to the servo saver, as shown.

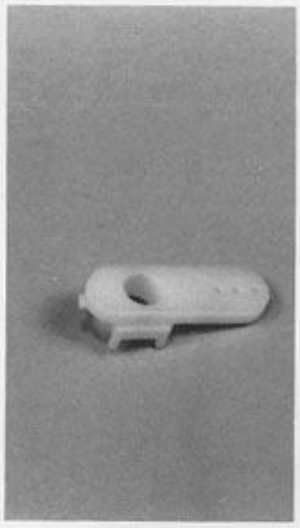


Fig. 18

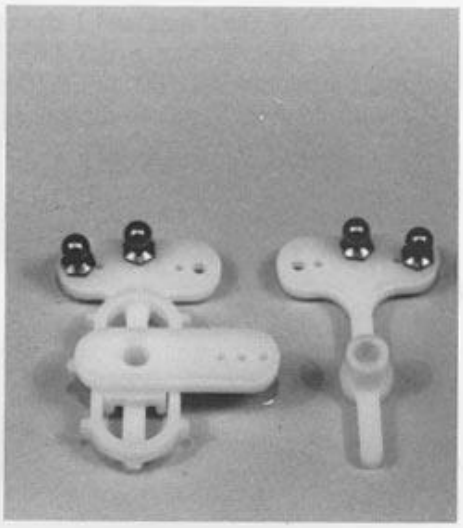


Fig. 19

-20- Locate the 2 flat head long Phillips screws #6281 in package #62. Install them as shown using 2 plain 8-32 nuts as shown in Fig. 20. Use a drop of Blue Loctite to secure nuts. Wipe off all excess before proceeding to the next step.

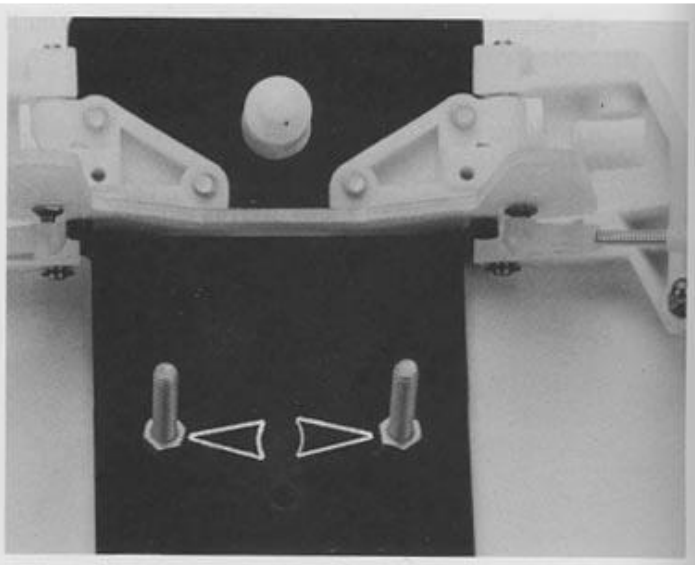


Fig. 20

-21- Place the servo saver parts on the 2 screws, as shown. Take the 2 nylon nuts and screw them down until the servo saver starts to bind, and then back the nuts off about 1/2 turn until the servo saver arms pivot freely.

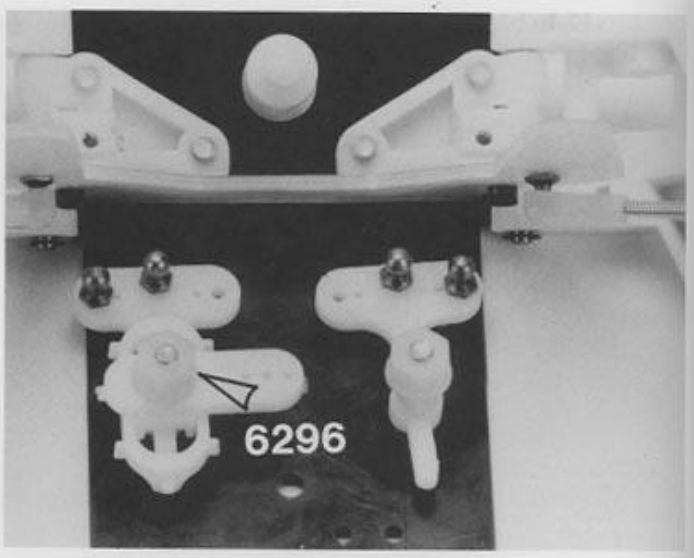


Fig. 21

-22- Take the 2 long and 1 short threaded rods out of the bag. Make the long rods 2.025" or 51.44 mm long, and the short rod 1.500" or 38.10 mm long. These are measured at the center of the ball again.

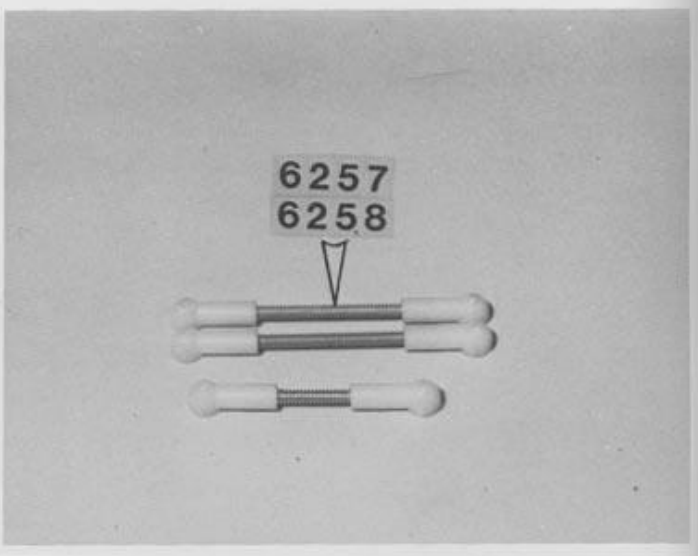


Fig. 22

-23- Snap the short rod on the servo savers, as shown.

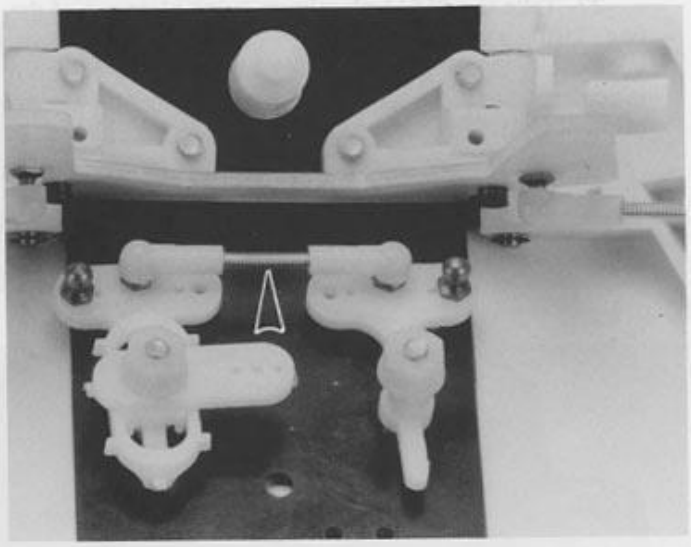


Fig. 23

-24- Snap the L.H. and R.H. tie rods on, as shown.

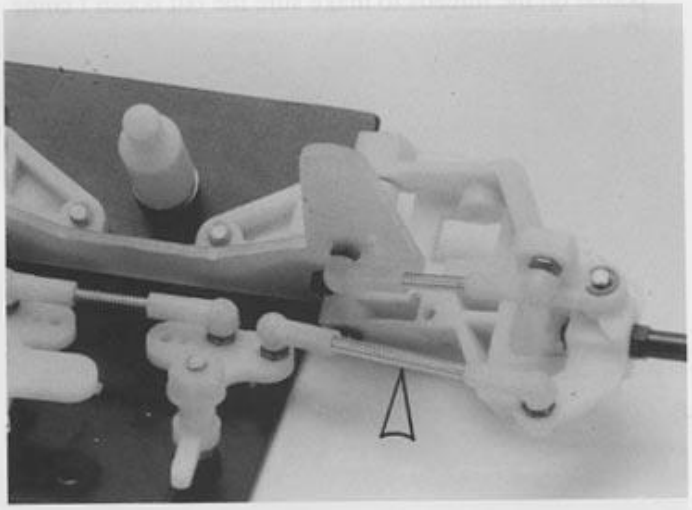


Fig. 24

-25- In the #612 bag, take out the #6609 drive gear pivot. Also in the #612 bag is a small bag with screws. In this bag is a small split roll pin. This pin goes into the hole in the pivot, as shown. Use a needle nose pliers to hold the pin and lightly tap it into the hole.

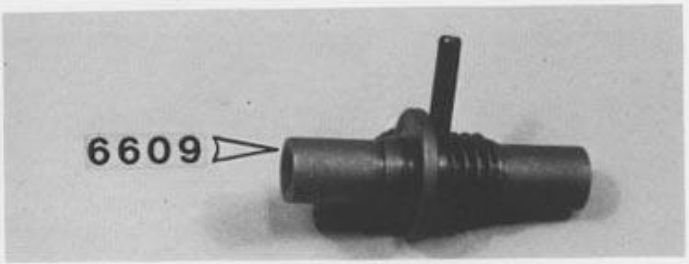


Fig. 25

-26- Tap the pin into the hole until it's evenly centered on both sides.

Fig. 26

-27- Take the #6611 aluminum spine plate out of the bag. Using a vise, or a piece of wood with a 1/4" hole in it, carefully tap the pivot into the plate. Make sure the pin is centered with the slots in the plate, and that the flange of pivot is flush against the surface of the plate.

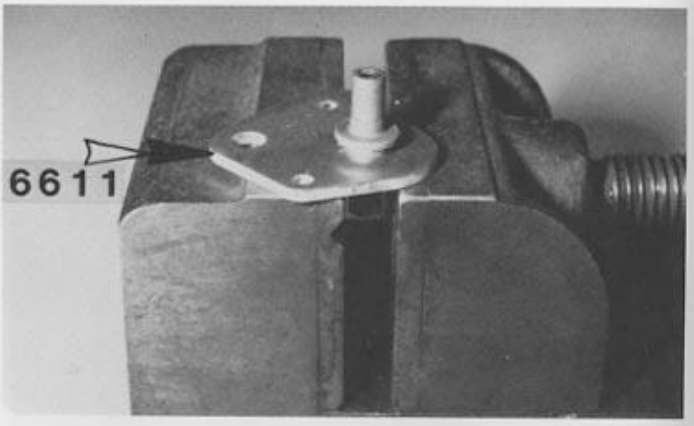


Fig. 27

-28- Take the large thin 1/4-28 hex nut out of the bag. Turn the plate over and install the nut. Tighten the nut with a socket or open-end wrench while holding the spine plate. You may want to put a drip of thread-locking compound on the threads to make sure the nut doesn't come loose.

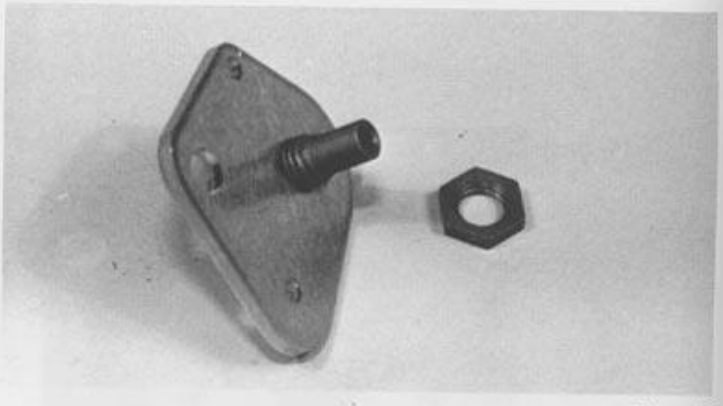


Fig. 28

-29- The pivot should look like this installed.

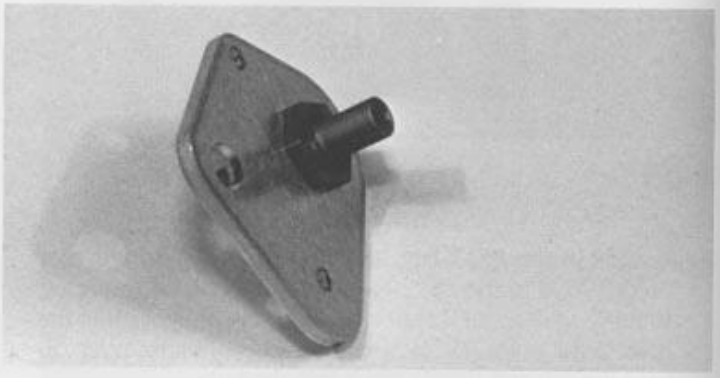


Fig. 29

-30- Take the #6610 idle gear pivot and gently tap it all the way into the aluminum plate, again making sure that the flange touches all the way around.

Fig. 30

-31- Turn the plate over and take the flat steel washer and slip it over the pivot as shown by the arrow.

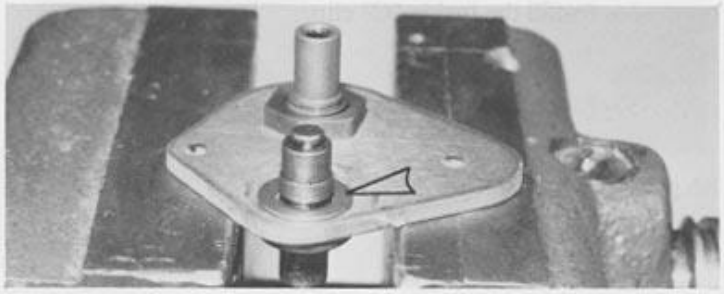


Fig. 31

-32- Install the large curved "E" clip, as shown, with the center up, and the ends down.

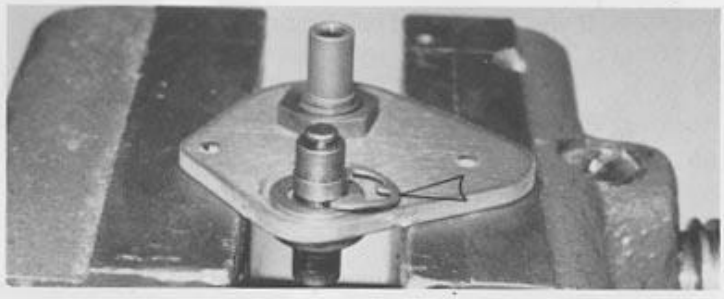


Fig. 32

-33- Install the clip all the way on. Make sure that it is fully seated.

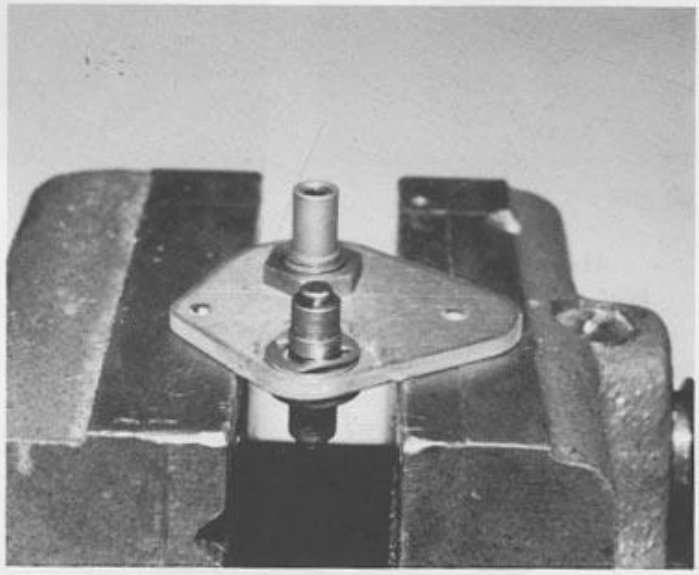


Fig. 33

-34- Associated makes a complete ball bearing package for the TQ10, part #6900. We'll show you how to install the bushings, which come with the kit, and the ball bearings. They're both installed in almost the same manner. If you are using bushings then wipe off the bushings and install them into the 2 #6612 axle drive gears. They are a snug fit so it will be necessary to tap them in with a soft blunt object such as a wood dowel. Make sure they are seated all the way in so that the snap ring groove in the gear is exposed.

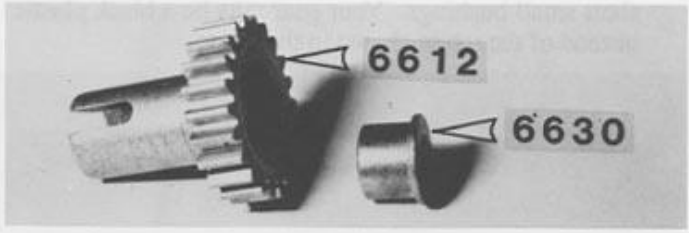


Fig. 34

-35- If you have the ball bearing kit, install the small unflanged bearing #6901 first and then the #6902 flanged bearing.

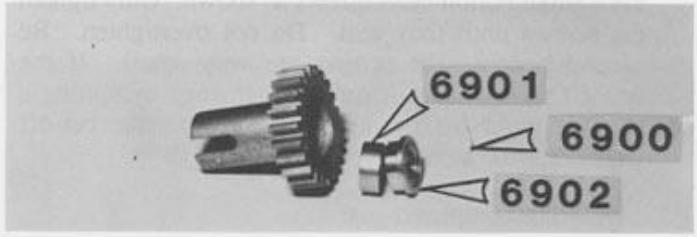


Fig. 35

-36- Install the inside "C" clip.

-37- Make sure the clip seats all the way.

Fig.36

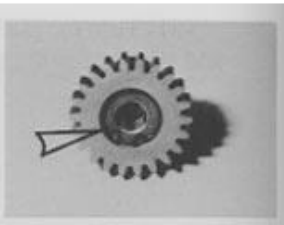


Fig.37

-38- If you've installed ball bearings, now install the "C" clip.

-39- The installed clip should look like this.

Fig. 38

Fig. 39

-40- Now take the aluminum plate, and put a little oil on the bushing in one of the #6612 gears and install it onto the #6609 pivot, using one of the button head screws, as shown.

Fig. 40

-41- Turn the plate over and oil and install the other gear.

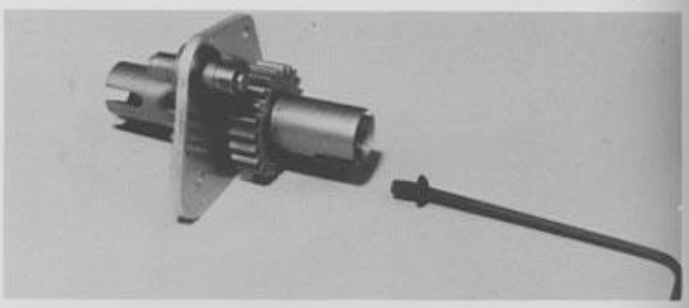


Fig. 41

-42- Take the 2 #6613 plastic gears out, and 2 of the short small bushings. Your gear may be a black plastic instead of the white shown in the photo.

Fig. 42

-43- Install the bushings in the gears and then install the 4 small button head screws as shown. Only tighten the screws until they seat. Do not overtighten. Be careful because the screws are very small. If the wrench starts to slip it can be sharpened by cutting a small amount off the end with an abrasive cut-off wheel or grind stone.

-44- The completed gear.

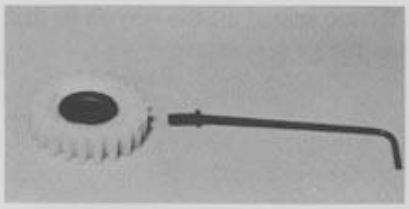


Fig. 43

Fig. 44

-45- The ball bearing installs the same way.

-46- Install the screws in the gear.

-47- Completed gear with ball bearing.

Fig. 45

Fig.46

-48- To lock the screws in, we recommend the use of pink ZAP. This is a cyanoacrylate adhesive. Put a VERY, VERY SMALL amount of ZAP on the end of an Xacto blade and put it on the bottom screw as shown. Now rotate the gear and put it on the 2nd screw, which will now be in the bottom position. This way if you get too much ZAP on, it will run down away from the bearing and not on the bearing. Do all 4 screws this way, on both gears.

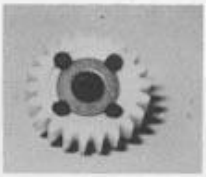


Fig.47

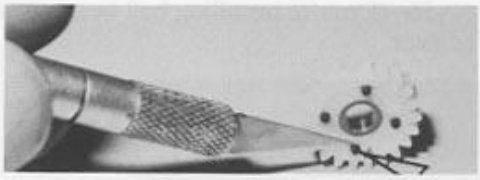


Fig. 48

-49- Now oil the bushing and put the completed gear on the pivot pin on the aluminum spine plate.

-50- Oil and put the 2nd gear on and install both "E" clips.

Fig. 49

Fig. 50

-51- Rotate both L.H. and R.H. gear sets. They both rotate very freely. If they do not rotate freely, you probably don't have one of the pivot pins installed properly in the aluminum plate. (Those flanges **must** be flush and even against the plate!) You can also try lifting and rotating the plastic gear a few teeth meshing. You can find a position where they are the smoothest.

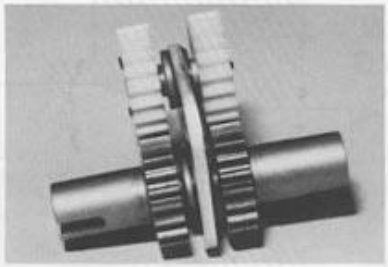


Fig. 51

-52- Now take the #6618 differential shaft with gear, and the thick thrust washer with the small hole same small bag. The gear is locked to the shaft on a taper. If the gear has come loose you can reseat by supporting the gear on the top of a vise and giving the big end of shaft a sharp rap with the WOODEN handle of a hammer.

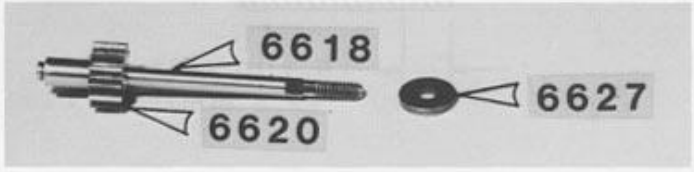


Fig. 52

-53- Slip the washer on the shaft. Slip the blue thrust bearing on, as shown. Now set this shaft aside until we do step #67.

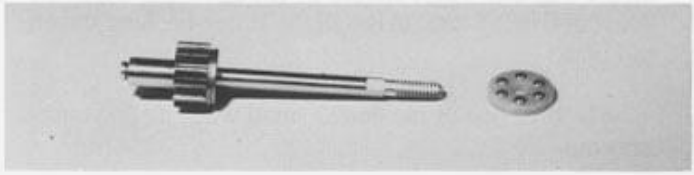


Fig. 53

-54- Take one of the #6606 bearing adaptors out of bag #612 and one of the narrow bushings with a 1/4" dia bore.

-55- Install the bushing all the way in the adapter, as shown.

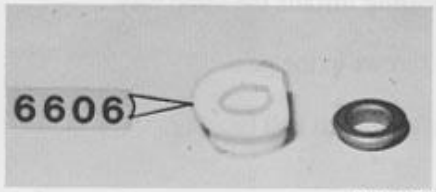


Fig. 54

Fig. 55

-56- If you're installing ball bearings install it in the adapter.

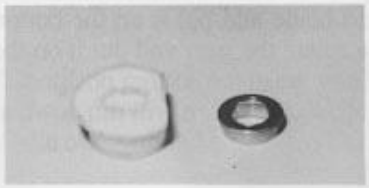


Fig. 56

-57- Take the #6617 diff tube out of the bag.

-58- Oil the bushing and slip it on the diff tube, as shown.

-59- Take the #6621 diff pinion gear out of the bag.

Fig. 57

Fig. 58

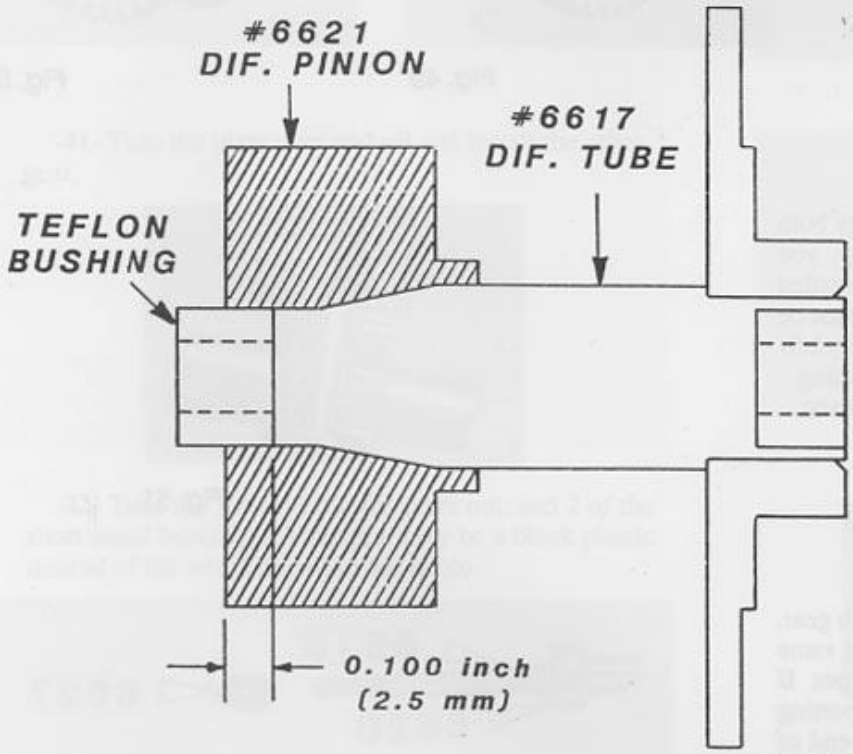


Fig. 60

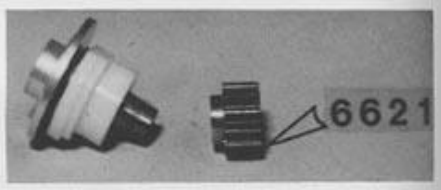


Fig. 59

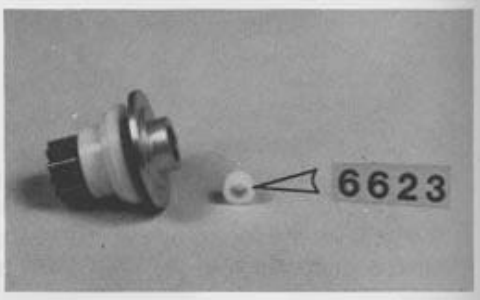


Fig. 61

-60- Slip the gear onto the tube and tap the assembly together using the plastic handle of a screwdriver. DO NOT use a vise to squeeze it on. The gear does NOT go all the way on. There should be enough room left in the gear (.100 or 2.5 mm) to install the Teflon bushing shown in Fig. 65.

-61- Take one of the #6623 small white Teflon bushings out.

-62- You should be able to push the bushing into the tube with your finger.

-63- Now take the other #6623 bushing and the other thick thrust washer out. Push the bushing inside the washer.

Fig. 62

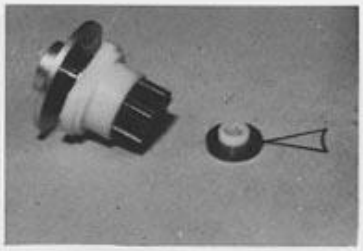


Fig. 63

-64- Push the bushing into the diff tube, as shown.

-65- Now slip the diff tube assembly onto the diff shaft, as shown.

Fig. 64

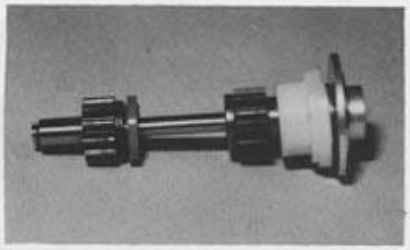


Fig. 65

-66- The diff tube assembly should spin freely on the diff shaft. If not, the Teflon bushings might not be centered correctly. Check this, and use the shaft to help center the bushings.

Fig. 66

-67-Take one of the #6625 diff drive rings out of the bag.

-68- Slip the ring on the hub, as shown.

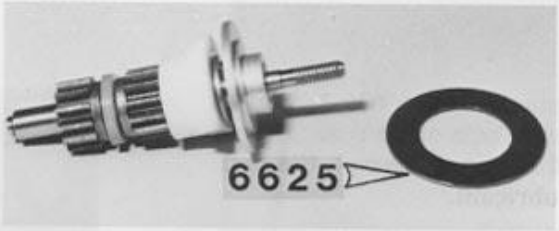


Fig. 67

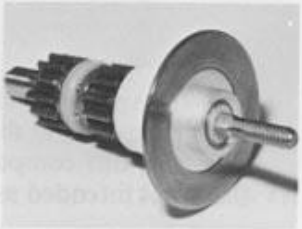


Fig. 68

-69- Take the #6626 balls out of the bag. In bag #615, take out the plastic spur gear (#6653).

Fig. 69

-70-Push the 8 balls into the square holes in the gear as shown.

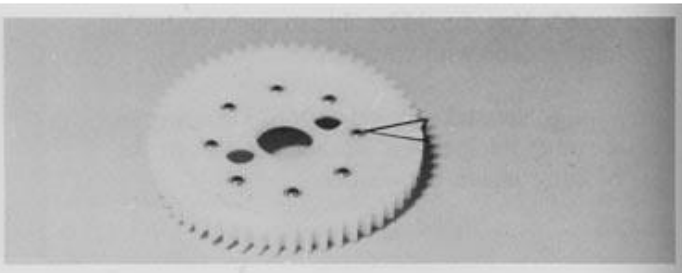


Fig. 70

-71- Take the #6636 Associated diff compound.

Fig. 71

-72- Apply a small amount of this special compound to the balls on both sides of the gear. NEVER use any other type of grease on the balls, otherwise the diff will slip.

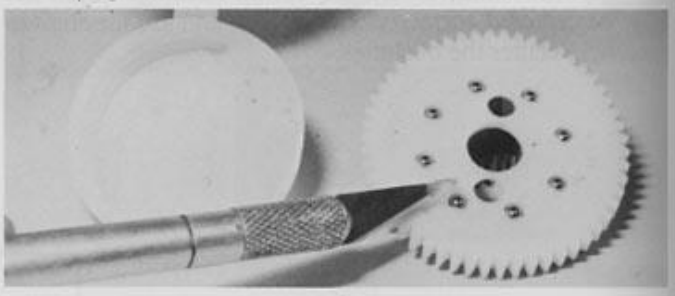


Fig. 72

-73- Apply a small amount of the #6636 Associated diff compound to the center hole of the gear. **Do not use this diff compound anywhere else on the car! It is not intended as a lubricant.**

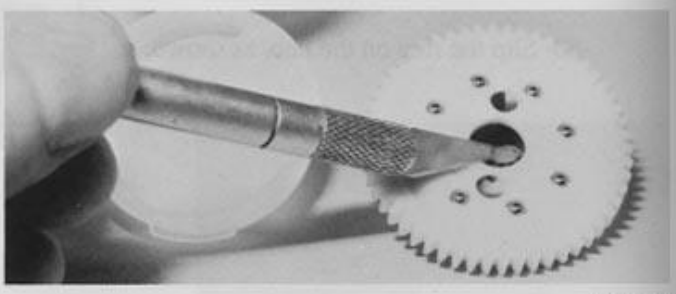


Fig. 73

-74- Take the diff shaft assembly and spur gear.

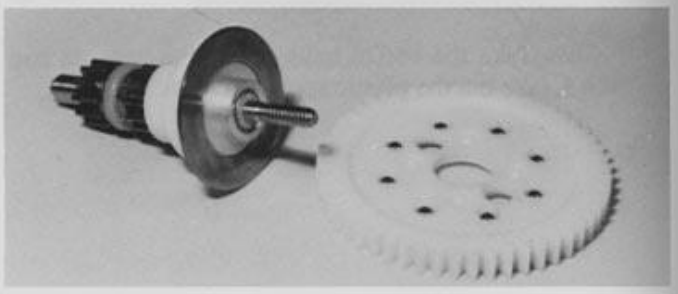


Fig. 74

-75- Slip the spur gear on the shaft. Take the other drive ring.

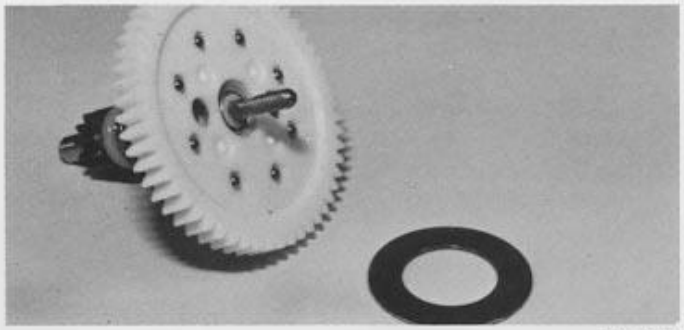


Fig. 75

-76- Slip the drive ring on the shaft and take the #6624 diff outer hub.

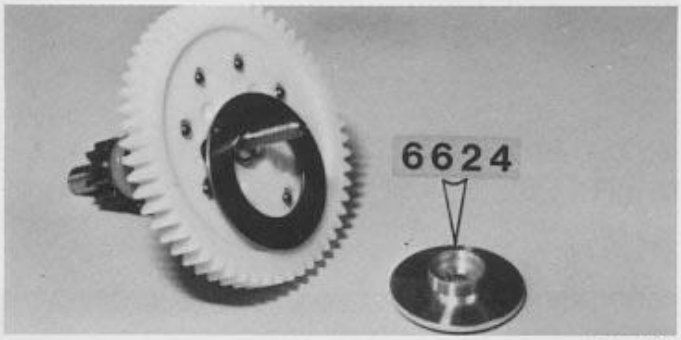


Fig. 76

-77- The outer diff hub has a notched hole to match the flat spots on the shaft. Align the two and slip the hub on the shaft. Check that both drive rings are centered and seated against the aluminum hubs. Take out the #6628 diff spring and nut.

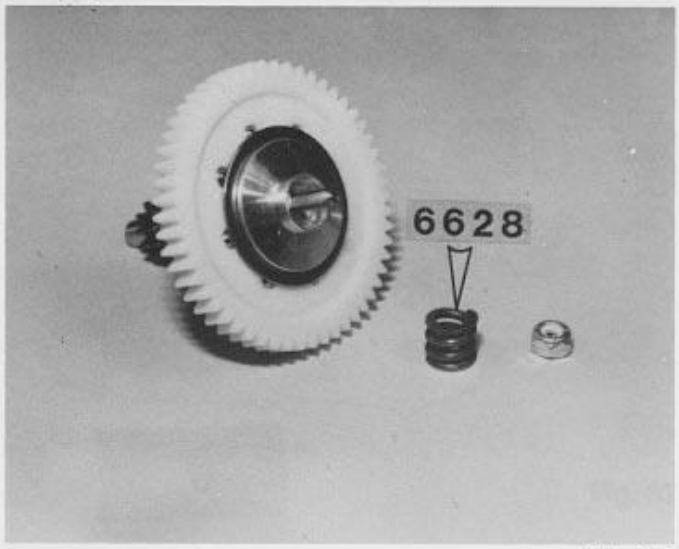


Fig. 77

-78- Slip the spring on and screw the nut on. You'll have to hold the small gears from turning while screwing the nut on. Screw the nut on until the end of the nut is even with the end of the shaft, as shown.

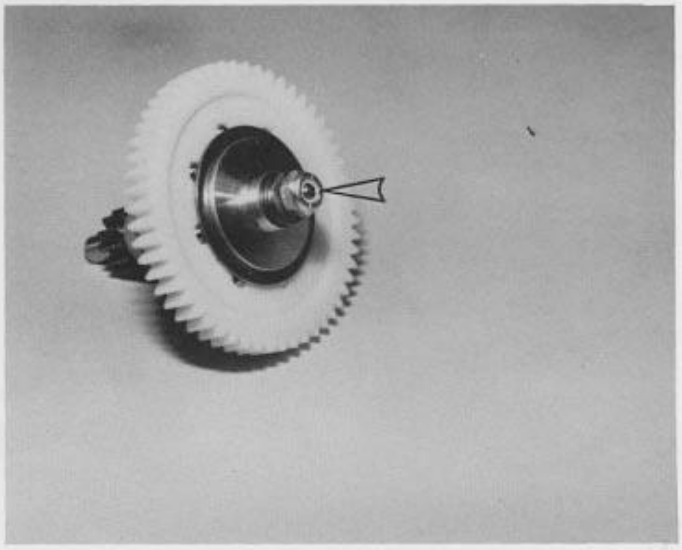


Fig. 78

-79- Hold the diff assembly in your hands, as shown. Hold the outside small gear still and slowly rotate the big plastic spur gear. The inside small gear should rotate, and the whole rotation should be very smooth. Then the diff is working correctly. Now hold both small gears tightly in your fingers, and try to turn the big plastic gear. It should be VERY HARD to turn.

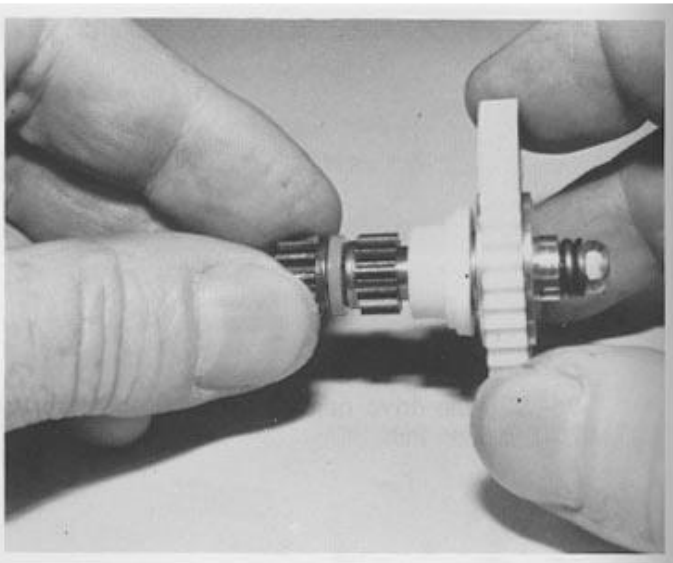


Fig. 79

-80- Take the #6607 motor mount out.

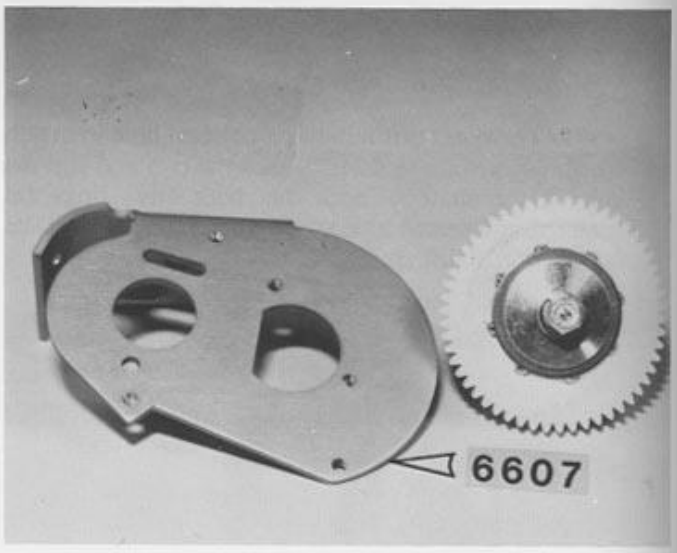


Fig. 80

-81- Slip the diff into the motor mount, as shown.

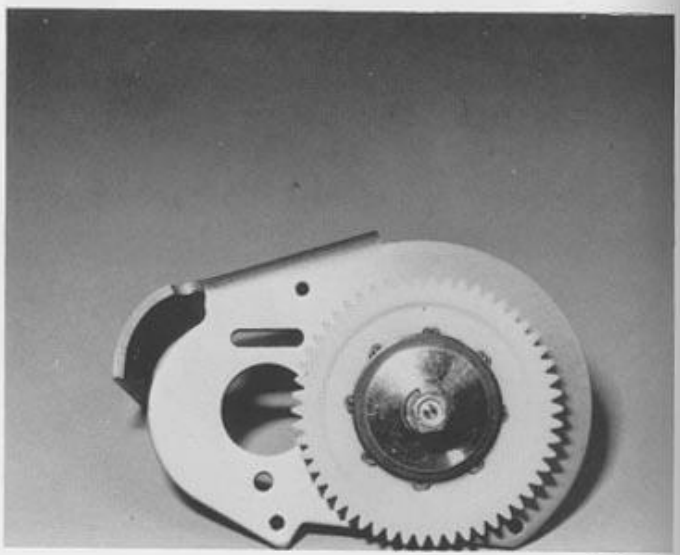


Fig. 81

-82- Make sure the bearing adapter is properly seated in the motor mount. Take out the #6605 transmission housing, as shown.

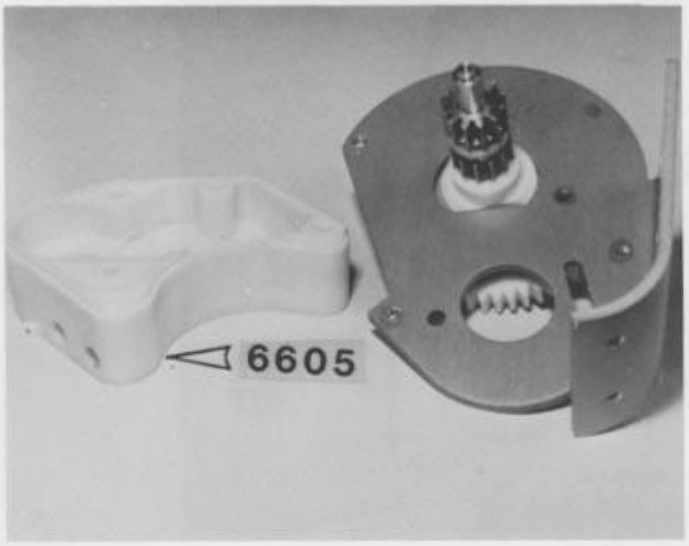


Fig. 82

-83- Slip the R.H. half of the housing onto the diff.

NOTE: There is a flat on the adapter that MUST match a flat in BOTH the motor mounting plate and the transmission case. The adapter is a tight fit in the transmission case, so you'll have to work to get it started. If you have installed it properly it (the adapter) will be in far enough to be flush on the inside of the case half-shell. The motor plate will be loose for the next 9 steps.

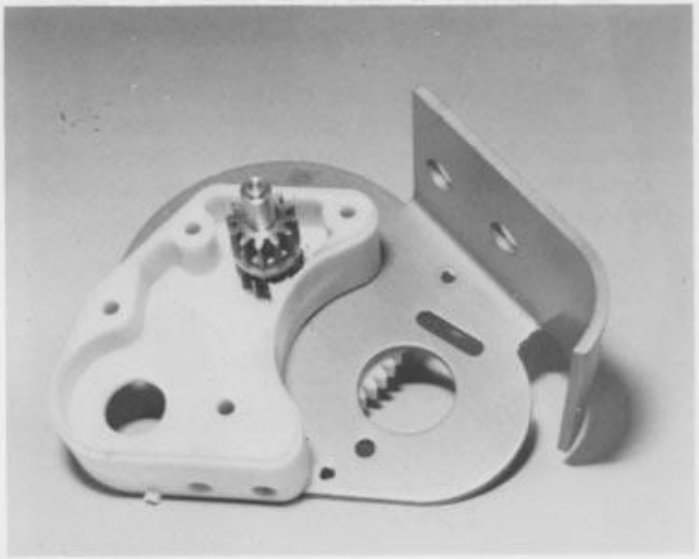


Fig. 83

-84- Take the idler gear assembly.

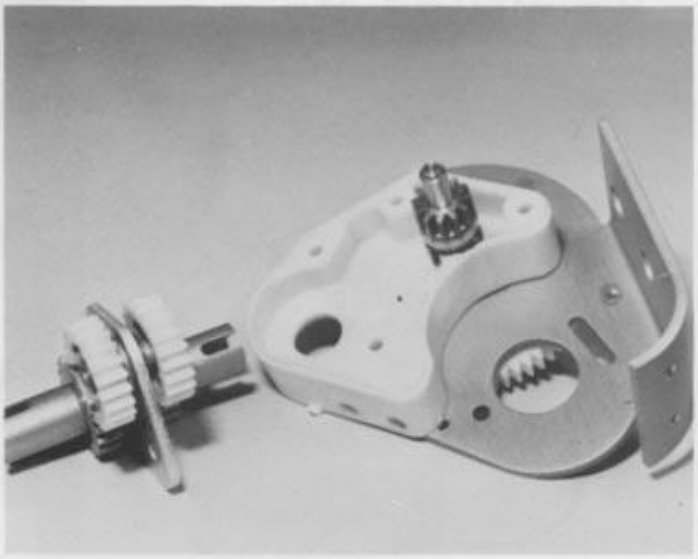


Fig. 84

-85- Set the idler gear assembly into the housing, as shown.

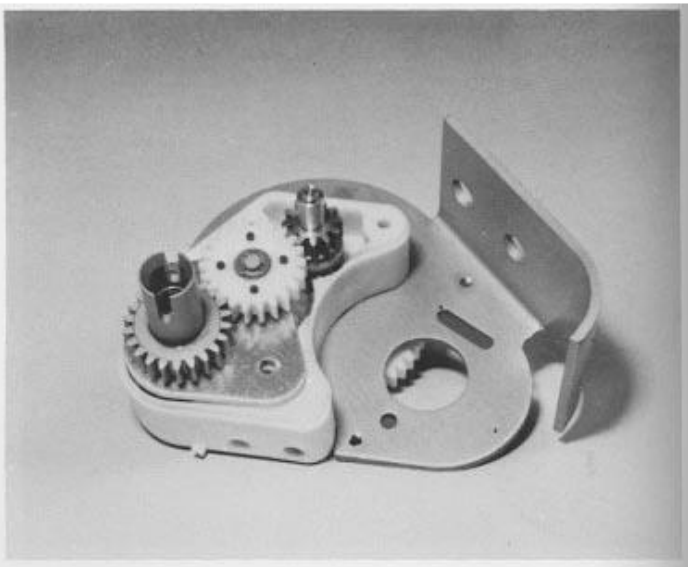


Fig. 85

-86- Take the L.H. side of the housing and push it onto the R.H. side. It will snap together with finger pressure.

NOTE: The seam between the two halves of the case should close completely with no more than a few thousands of an inch gap showing (usually on the bottom of the case). If you cannot close the case completely look for something wrong inside.

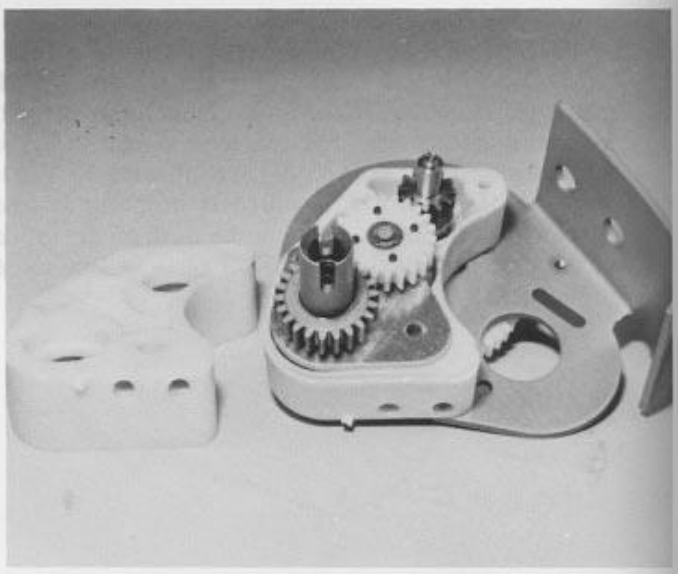


Fig. 86

-87- Take the other bearing adapter and cut a small notch in the edge, as shown. This will make installing and removing the "E" clip a lot easier.

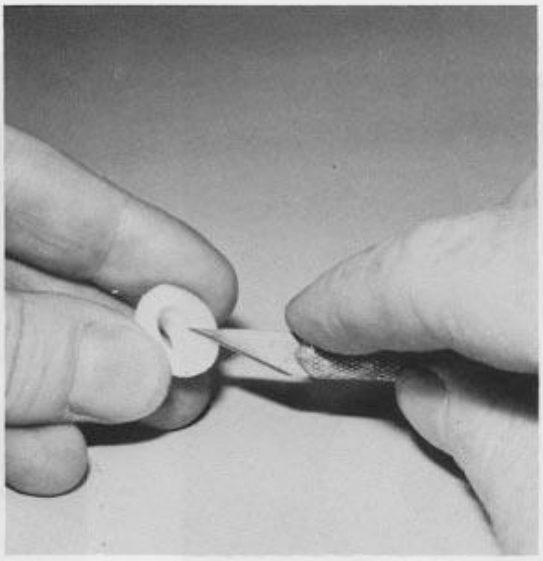


Fig. 87

Fig. 88

-88- Install the bushing or ball bearing into the adapter.

-89- Install the adapter onto the diff shaft.

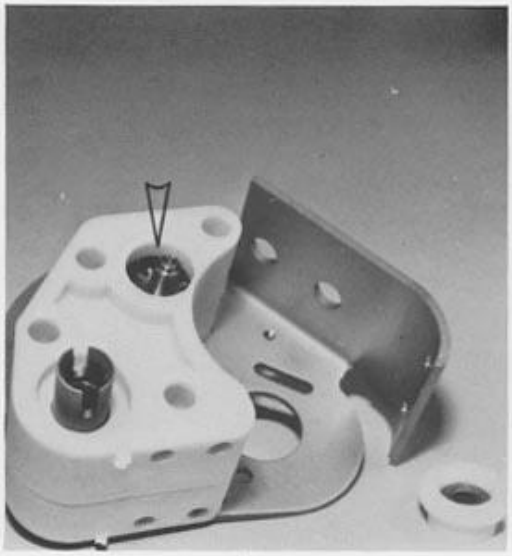


Fig. 89

-90- Install the "E" clip on the end of the diff shaft.

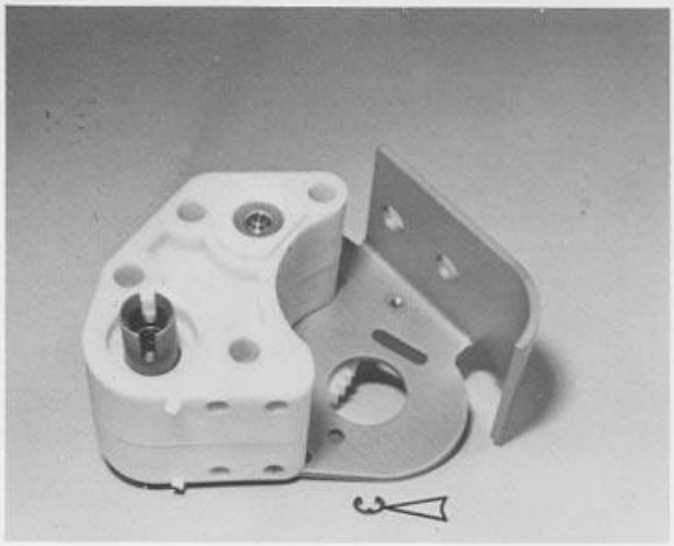


Fig. 90

-91- Make sure the "E" clip is seated correctly.

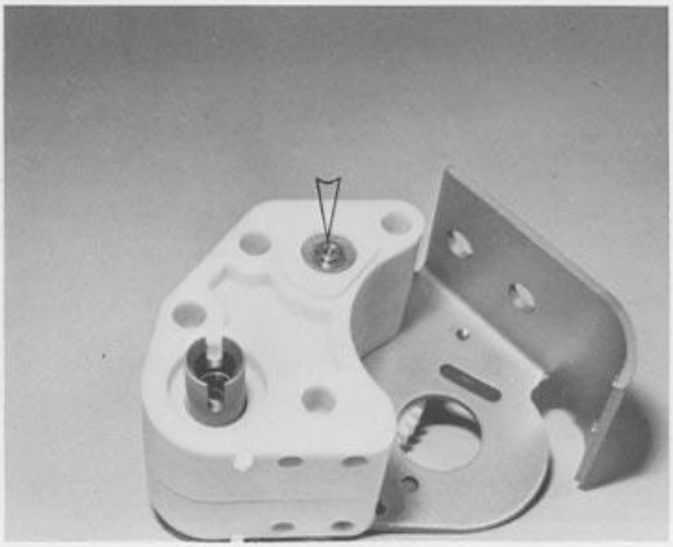


Fig. 91

-92- Take the 3 long Allen screws, as shown, and screw them into the motor mount.

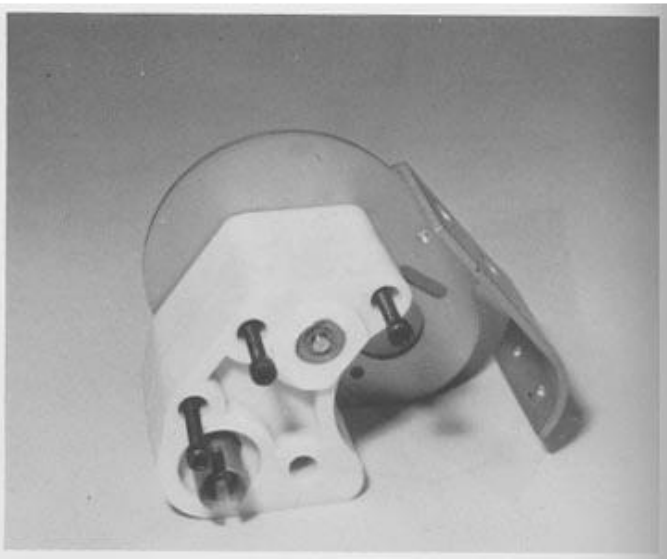


Fig. 92

-93- Take the other short screw, then slip a 4/40 nut into the hex hole, as shown, and tighten this screw.

NOTE: After assembling the transmission with bushings for the first time the large gear may be hard to turn. You can free things up by giving a sharp blow to each END of the diff shaft using the plastic handle of a screwdriver as a hammer. A few raps on the adjustment nut followed by a few against the adapter on the other side will help to align the bushings. Once you start running the car, the bushings will free up completely.

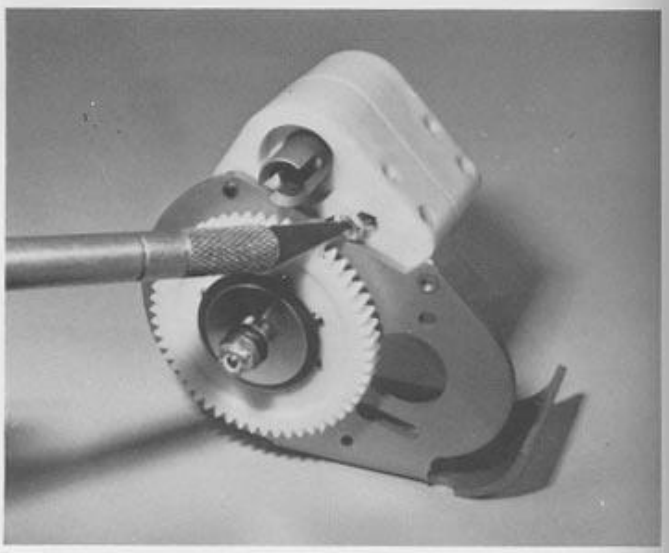


Fig. 93

-94- On the bottom of the transmission case, as shown, are 2 molding lugs. Cut these off flush with an Xacto knife.

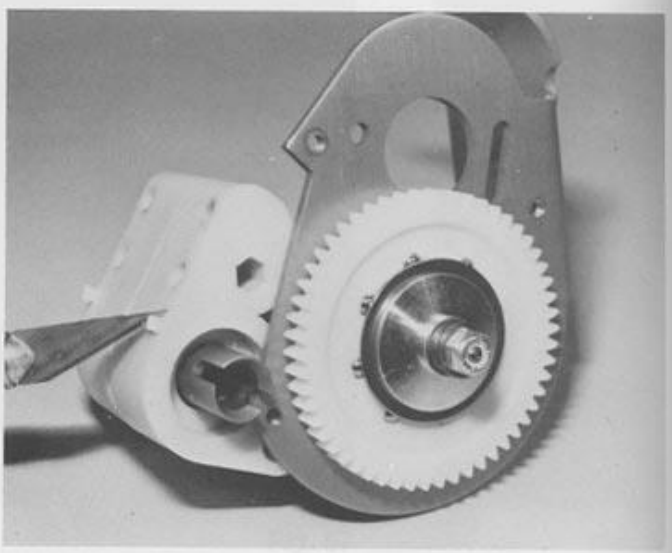


Fig. 94

-95- Take the 2 #6633 felt seals out and slip them on the hubs, as shown.

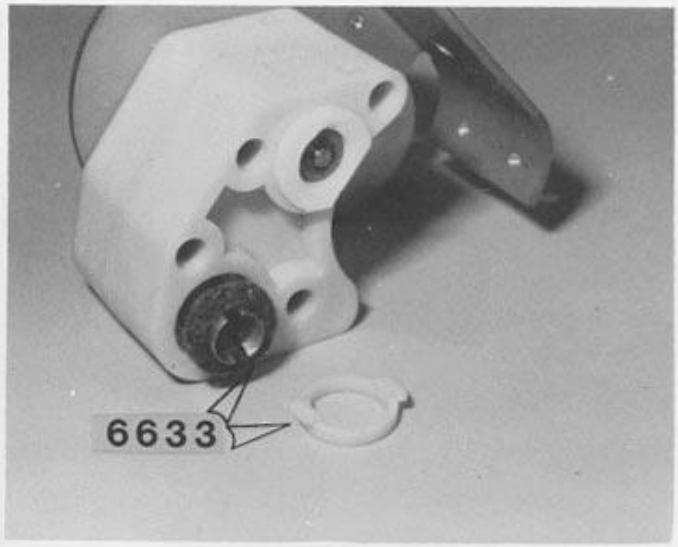


Fig. 95

-96- Now push the 2 felt retainers on. They should snap in. "Ears" should be horizontal. If they're loose, use a drop of contact cement to hold them in.

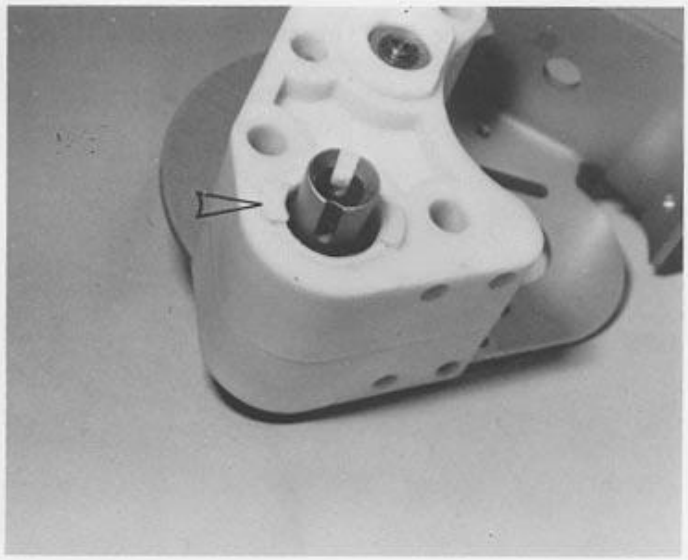


Fig. 96

-97- Take the sheet of double sided contact tape and cut a piece, as shown in #98.

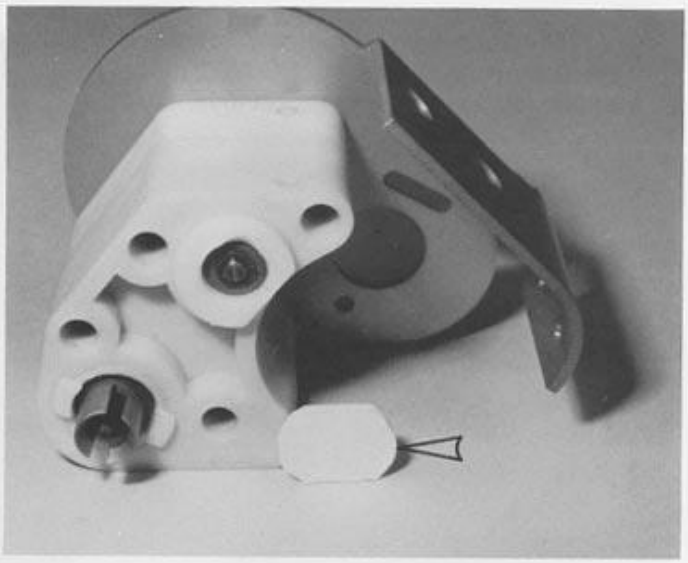


Fig. 97

-98- Pull the easiest to remove side of the tape off and stick the tape to the housing to act as a dust cover.

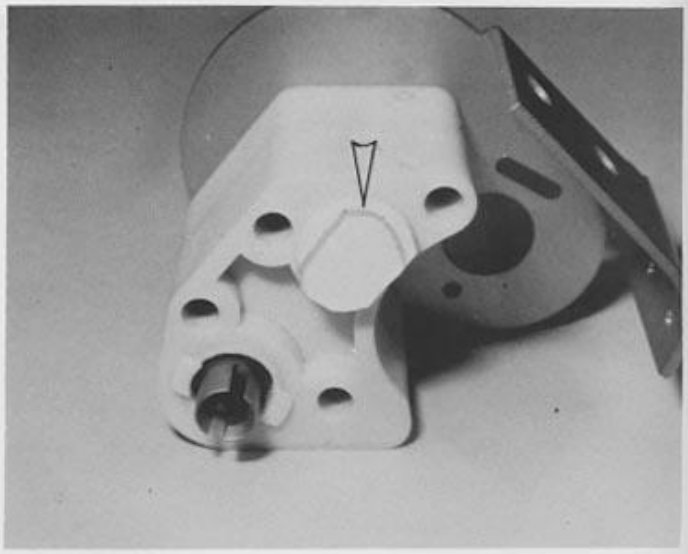


Fig. 98

-99- Take the #6323 rear bulkhead out and the 2 #6327 wing tubes. See photo 101. Take these, round off the square cut corners on the ends with a file, and tap the wing tubes into the bulkhead.

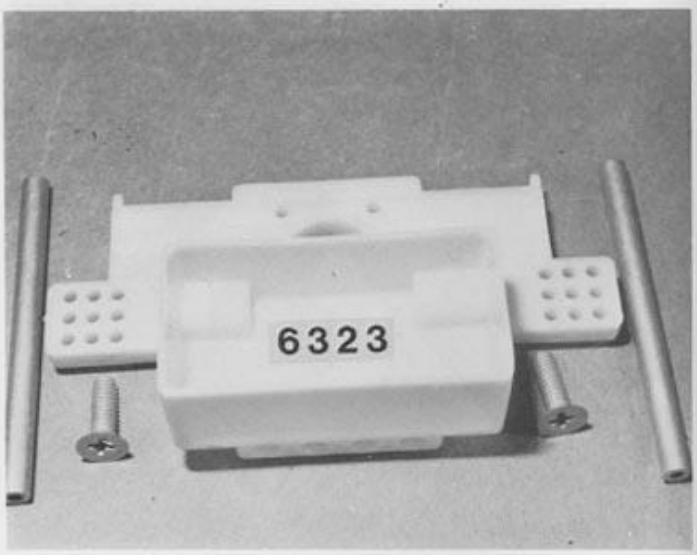


Fig. 99

-100- Take the 2 Phillips screws and attach the bulkhead to the chassis, but DO NOT tighten the screws all the way down yet, but almost tight.

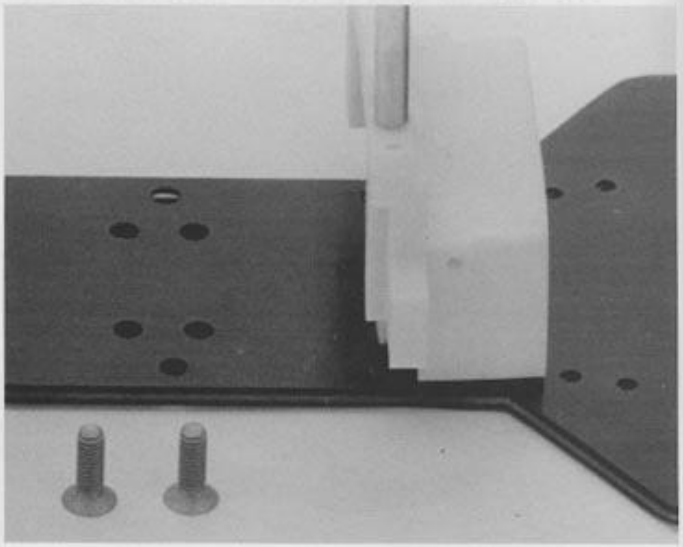


Fig. 100

-101- Install 2 ball ends into the upper, inner holes, as shown.

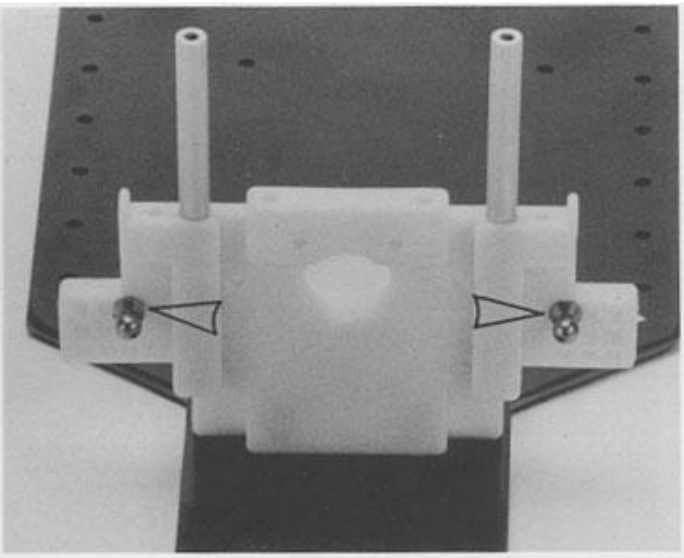


Fig. 101

-102- Take the transmission housing and install it with 4 Phillips screws. Do not tighten the screws all the way yet.

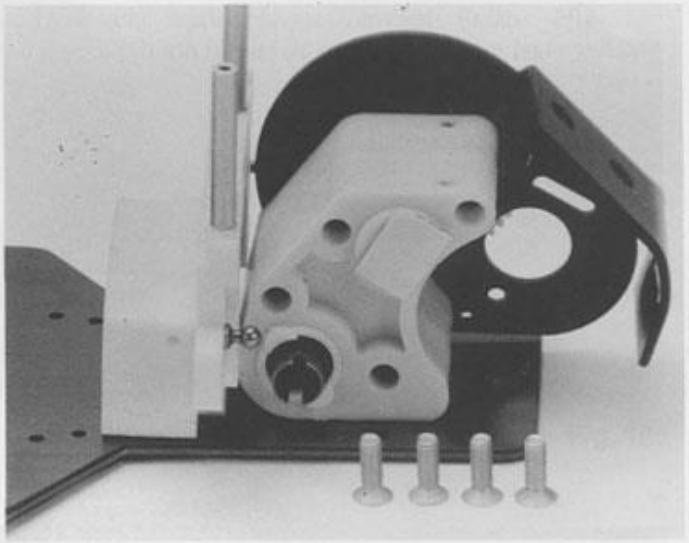


Fig. 102

-103- These 6 screws should be loose yet.

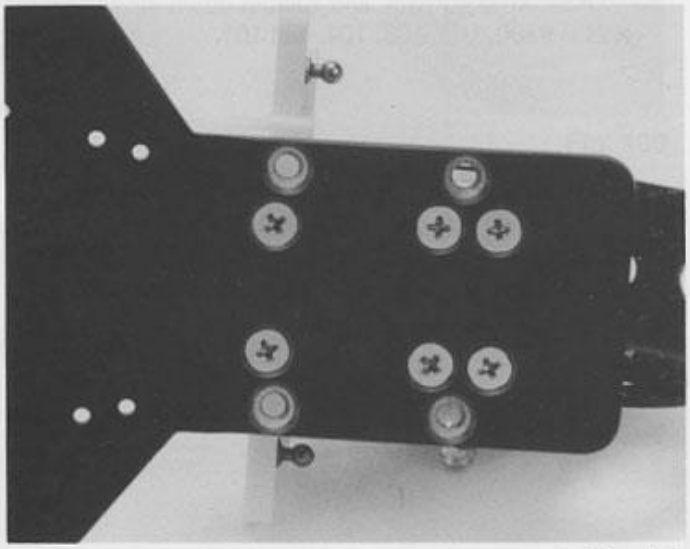


Fig. 103

-104- Take the #6325 transmission brace and install the rear body mount with one Phillips head screw as shown.

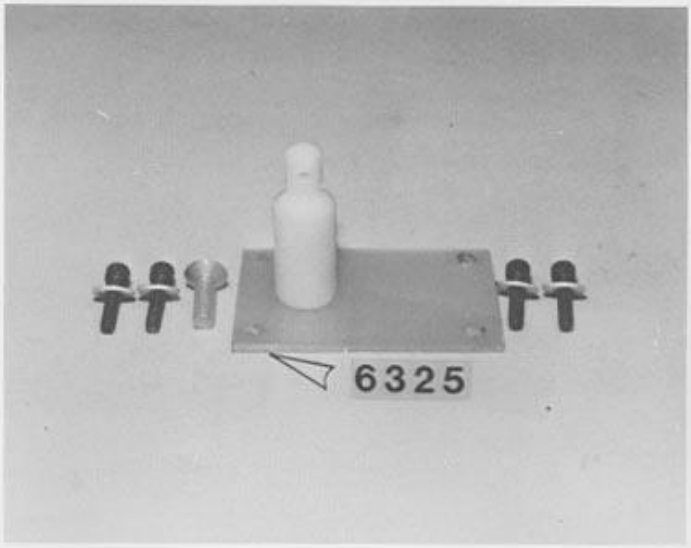


Fig. 104

-105- Install the transmission brace with 4 Allen screws and washers, as shown, but do not tighten all the way down yet.

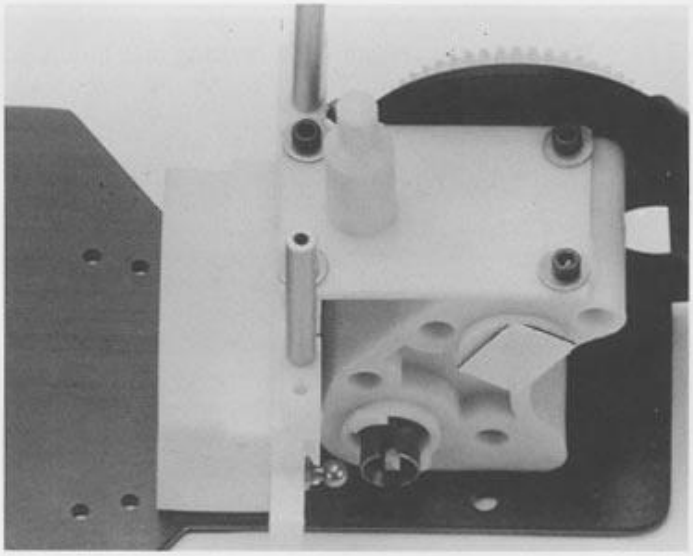


Fig. 105

-106- Now go back and tighten down all screws in photos #100, 102, 103, 104, and 105.

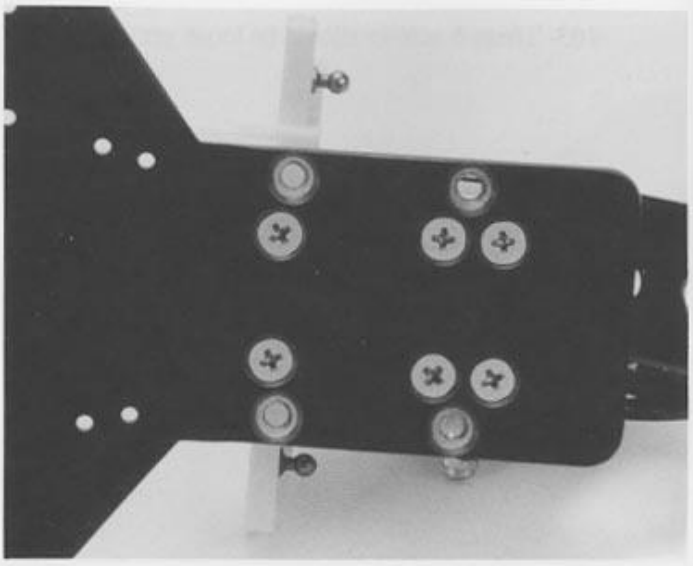


Fig. 106

-107- Take the #6360 rear suspension mount, out of bag 68, with the letter "L" on the bottom, the #6355 L. H. rear A-arm and the #6380 inner hinge pin. Line up the holes in the arm and mount and install the pin. Install the 2 "E" clips.

NOTE: The left and right rear mounts are attached together by a thin "runner" that should be removed with scissors.

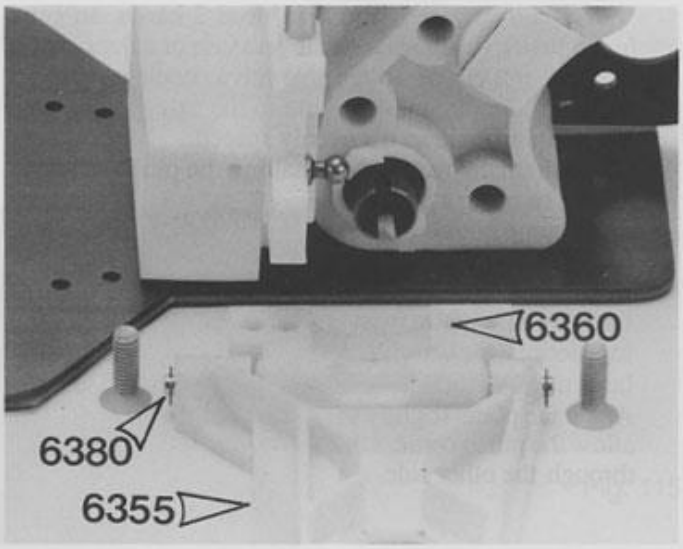


Fig. 107

-108- Install the L.H. mount to the chassis with 2 Phillips screws as shown. Now, install the R.H. arm.

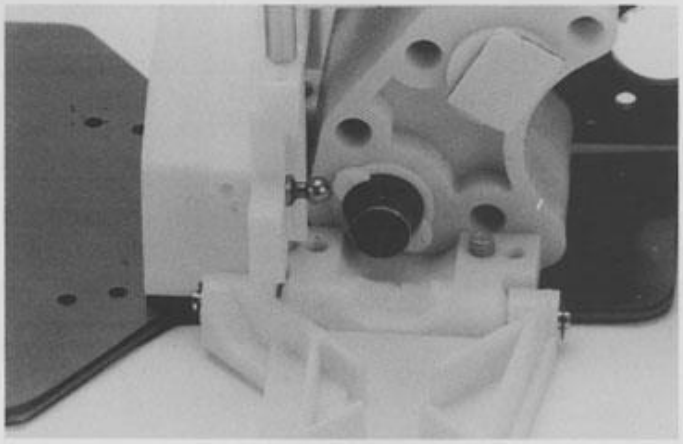


Fig. 108

-109- Before proceeding with the assembly of the rear hub carrier it's a good idea to check fit of the dogbone in the stub axle. If it does not slide and swivel freely then check for burrs around the dogbone pins or heat treating residue inside the stub axle. Also check that the spring fits freely in the small hole at the bottom of the dogbone socket (see Fig. 115). If either of these holes are clogged they can be cleaned by soaking the stub axle in hot or boiling water for a half hour. Dry and oil the stub axle after cleaning.

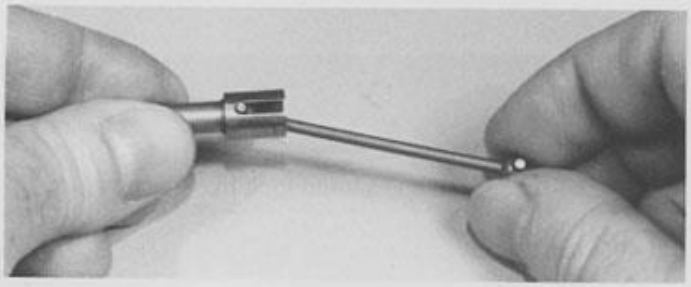


Fig. 109

-110- Take the #6374 rear stub axle and slip the flat washer, as shown, onto the axle. Install the bushing into the #6365 rear hub carrier in the direction shown. If you're installing ball bearings, install one of the large #897 bearings on each side of the #6365 hub carrier, and remove the flat washer from the axle. It is only used with bushings. Oil the bushing and slip the axle into the bushing. Now take the cone washer, the one that is not flat, and slip it on the shaft so that the part that touches the bearing is the center of the washer.

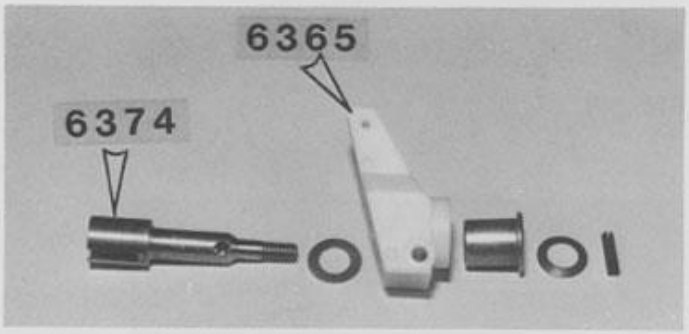


Fig. 110

-111- For this step you may need 3 hands, so get a friend to help you. Set the axle on a vise or a flat surface. Hold the roll pin or slotted pin with a needle nose pliers and align the pin with the hole in the axle. Lightly tap the pin in the axle so it's evenly spaced.

An alternate method of installing the pin is shown in Fig. 111a, using a pair of water pump pliers. Start the pin by holding with small pliers and pushing into the hole with a twisting motion. Finish with large pliers as shown. Angle the pliers slightly to allow the pin to come through the other side.

Fig. 111a

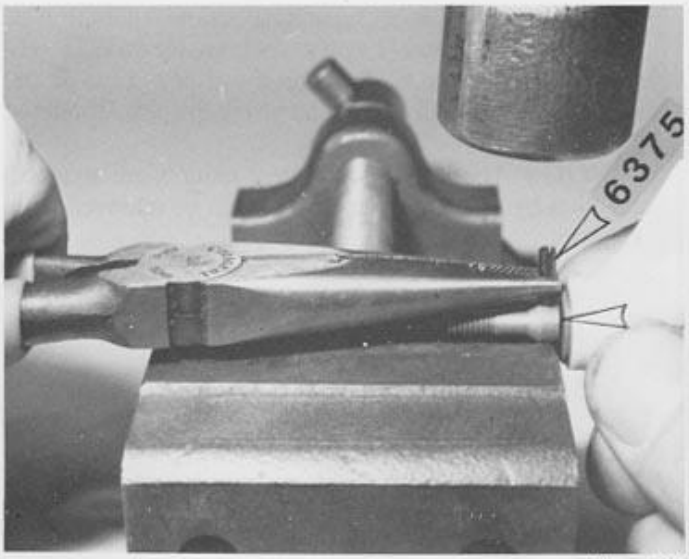


Fig. 111

-112- Install the hub carrier in the A-arm with the #6381 outer hinge pin. Install 2 "E" clips. Install a ball end in the forward side of the hub carrier, as shown. Install the R.H. hub carrier.

NOTE: The pin is intentionally a tight fit in the hub carrier; do not ream the hole. The pin will turn in the A-arm.

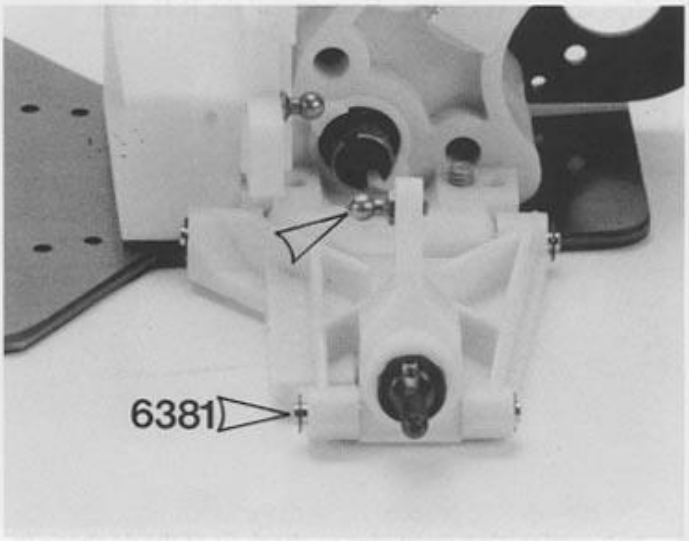


Fig. 112

-113- Your L.H. end should look like this now.

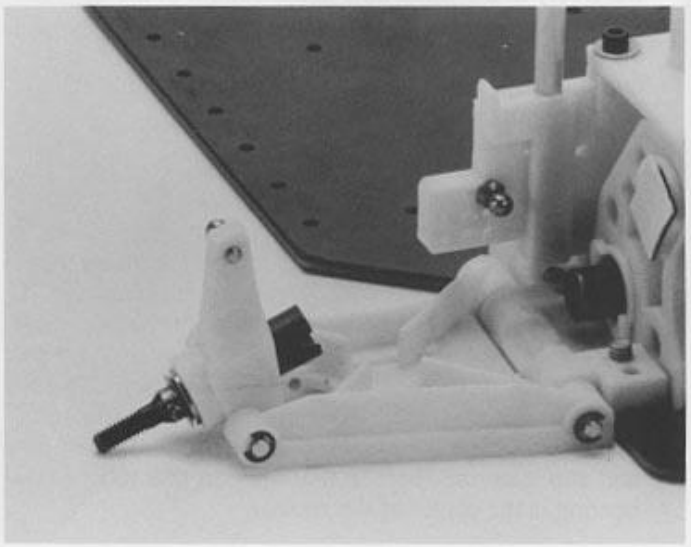


Fig. 113

-114- Take the 2 #6385 threaded rods and screw 2 plastic rod ends on each to a dimension of 1.600" or 40.64 mm. This is measured to the center of the ball again. Note that on this strut one ball faces forward and one faces to the rear.

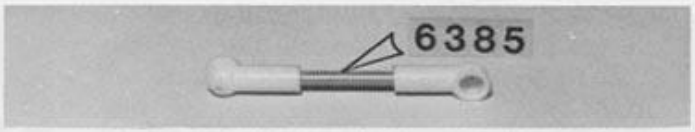


Fig. 114

-115- Take out the #6372 spring and nylon washer and the #6370 dogbone or rear half-shaft. Push the nylon washer into the #6612 gear.

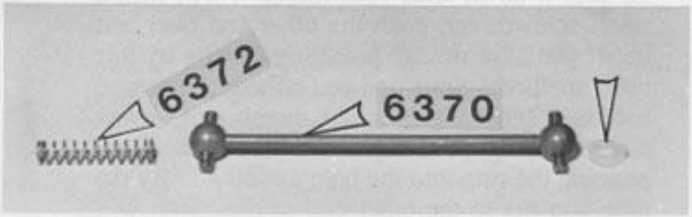


Fig. 115

-116- Put the #6385 strut onto the ball on the bulkhead. Put the spring inside the stub axle, and make sure the spring fits freely in the hole. If the spring binds you may be able to clear the hole with an Allen wrench; or you can reread step 109. Put the dogbone or half-shaft into the gear slot. Now, align the stub axle with the dogbone and slide it in. Put the strut on the ball in the hub carrier. It should look like Fig. 116 now. Do the R.H. side.

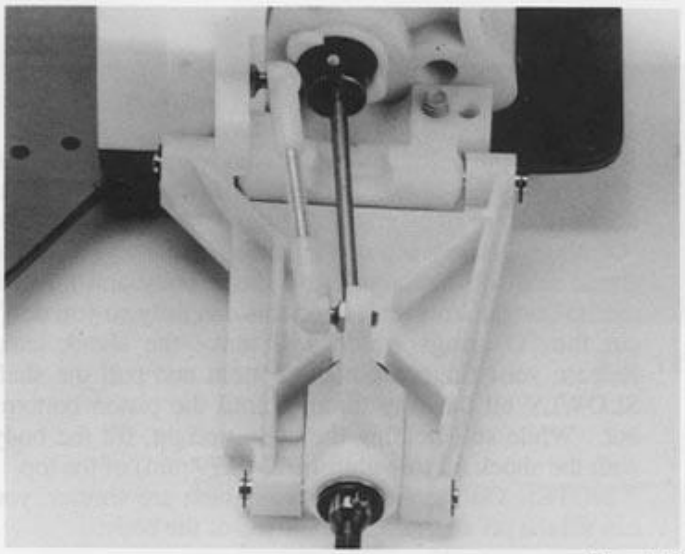


Fig. 116

-117- Take bag #69 and we'll assemble the rear shocks now. Take out the parts, as shown.

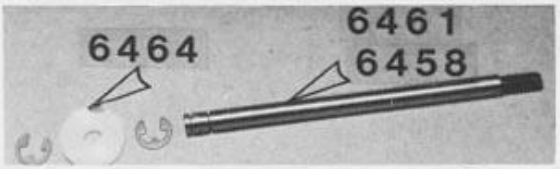


Fig. 117

-118- Slip on one "E" clip.

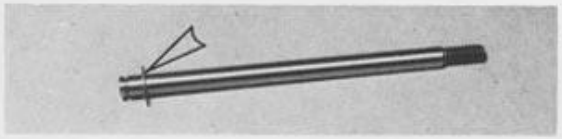


Fig. 118

-119- Slip on the #6464 piston and then another "E" clip. Make sure the "E" clips are fully seated. Now cut a 5/8" (16 mm) length of 1/8" dia. silicon fuel tubing and push it onto the shaft from the threaded end. Push the tubing all the way up to the piston. This will add a rubber "downstop" to your rear shocks which will prevent the wheels from dropping down too far and possibly breaking a dogbone. Add the rubber tubing to the REAR SHOCKS ONLY.

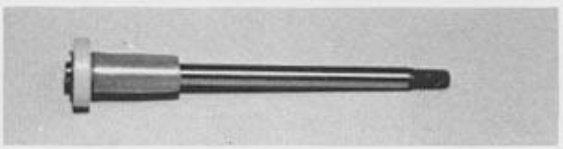


Fig. 119

-120- Take the #6452 and install the parts in the end in the order shown (see also Fig.120a). First, push the small nylon washer in all the way to the stop. Next push in one read "O" ring. Then the nylon spacer, and now the 2nd red "O" ring. Then the large nylon washer. Now install the large inner "C" clip. Start one end of the clip in, hold it down with your finger. Now, with a small screwdriver, push the other end over and in. If you have trouble installing the clip try this other method: Start one end of the clip in and hold it down with your left thumb nail. Now start working your right thumb nail around, pressing the ring into the hole as you go. By the time you get to the other end of the clip it will snap into the groove.

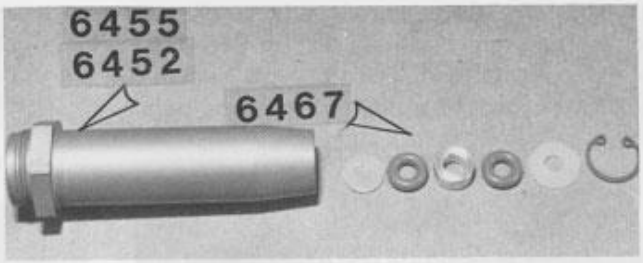


Fig. 120


Fig. 121

-121- Make sure the clip is fully seated.

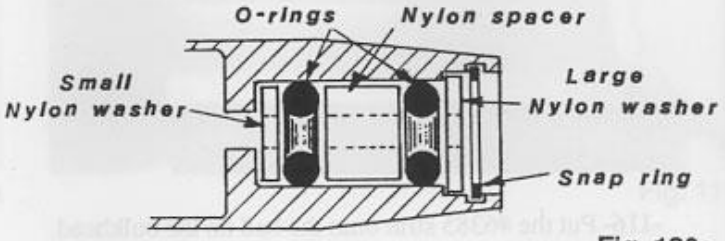


Fig. 120a

-122- While holding the shock body upright as shown, block off the hole at the bottom with your finger and put about 10 drops of oil into the shock body to lubricate the "O" rings. Now very carefully and smoothly, push the shock shaft down through the shock body and through the "O" rings. You want to do this carefully so you don't cut the "O" rings which will make the shock leak. Release your finger from the bottom and pull the shaft SLOWLY all the way through until the piston bottoms out. While still holding the body upright, fill the body with the shock oil to within 1/32" (0.79 mm) of the top.

NOTE: On the front shocks, which are shorter, you can fill the oil all the way to the top of the body.

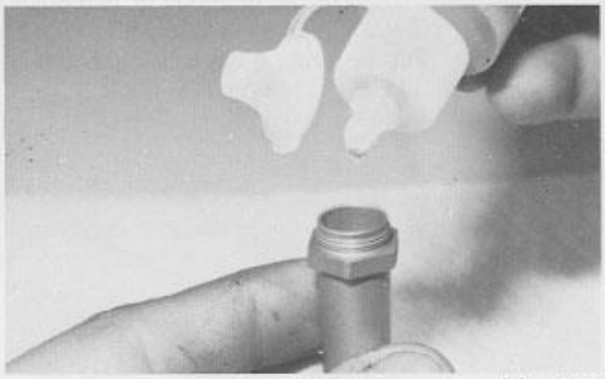


Fig. 122

-123- While holding the body upright, slip the large nylon washer down over the threads. Now screw the #6463 cap down over the body.

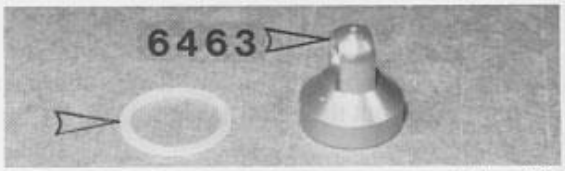


Fig. 123

-124- You can use a 1/2" wrench, or the Associated #6955 shock wrench to hold the nut, then stick a rod through the cap and tighten it down.

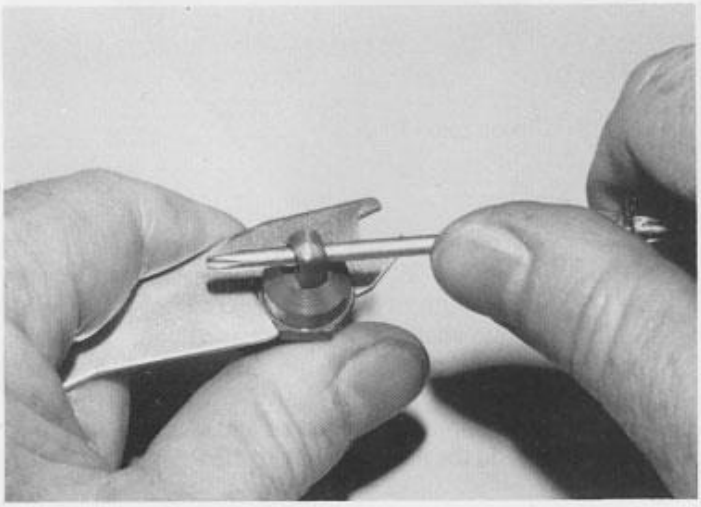


Fig. 124

-125- Your shock should look like this. Now do the other rear shock and the 2 front shocks in bag #610. Remember that the front shocks don't use rubber fuel tubing.

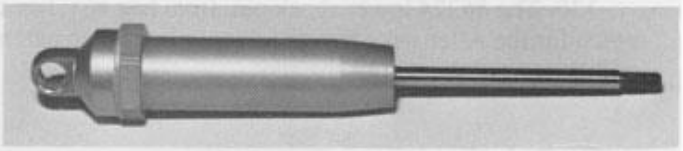


Fig. 125

-126- Your front and rear shocks should look like this, and they should all feel quite smooth when you move the shafts in and out.

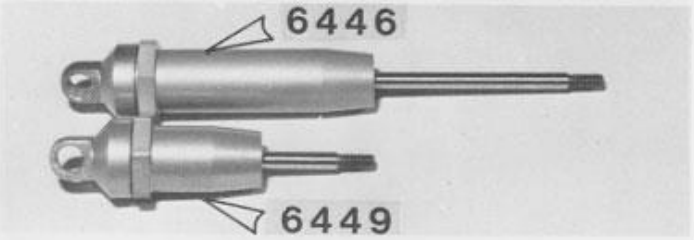


Fig. 126

-127- Install the 2 #6474 spring clamps on the rear shock with the shoulder side facing the springs. There should be 1/4" (6.35 mm) space between the collar and the body hex nut. Tighten the screws just enough to lock the collars. DO NOT overtighten. Slip on the long silver #6478 spring. There is also a long gold spring, which is stiffer that the silver spring. The silver spring will work best on most tracks, but you can experiment with the gold spring also, on you track. Take the #6471 plastic rod end and push it onto the metal ball. The easiest way to do this, is to lay the metal ball end on a table, with the flat end on the table. Set the plastic end on the ball and push it in place with your 1/4" nutdriver. Slip the spring holder on the shaft and into the spring and collapse or squeeze the spring. Then thread the plastic ball end on the shaft. You'll have to keep the shaft from rotating with a needlenose pliers. Grab the shaft close to the threads so that you don't scratch the part that rides in the "O" rings.

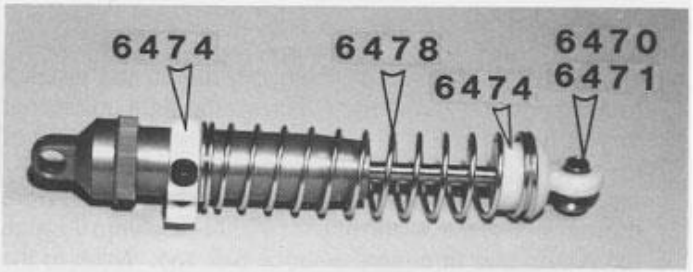


Fig. 127

-128- On the front shocks, install the spring collars all the way up, as shown. Use the short gold spring, which is stiffer than the short silver spring. Again, you can experiment with both springs, but start with the gold spring. Install the spring cups that go inside the springs, as shown, and then install the plastic ball end. Your shocks are now complete.

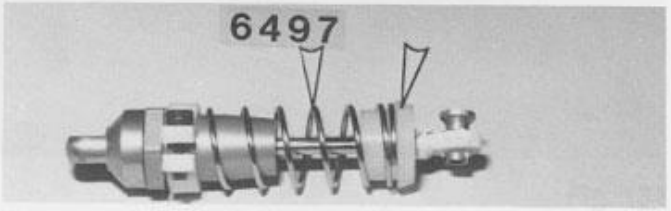


Fig. 128

-129- Now we'll install the front shocks on the car. The arrow in the photo is pointing to the upper mount. Install one of the Allen screws through the fiberglass shock strut, from the rear. Some kits have two holes at t he top of the strut. In that case use the LOWER hole. Now screw down and tighten one of the 4/40 plain nuts. Now slip a plain aluminum washer on. The arrow is pointing to the flanged nylon shock bushing. Slip this bushing on next, with the flanged end on first.

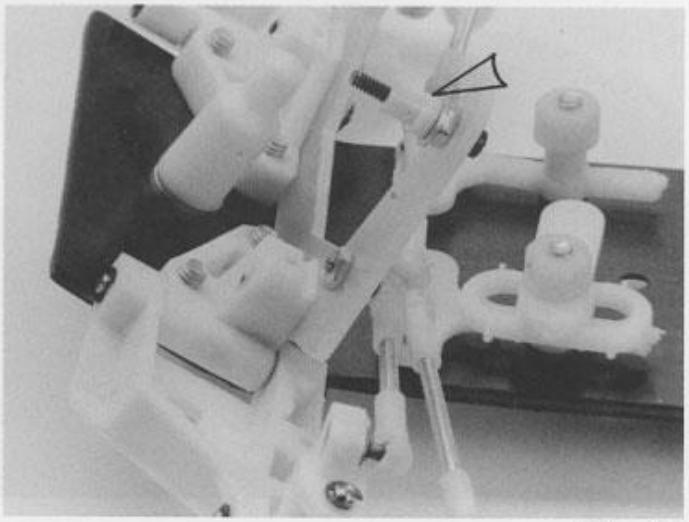


Fig. 129

-130- The #6224 lower shock pin, from bag #61, has a notch for the Allen set screw to lock in place. The notch will go toward the rear of the car.

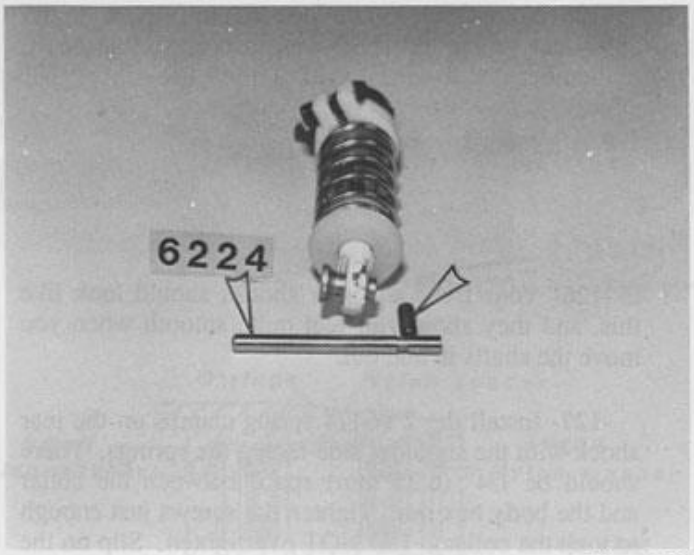


Fig. 130

-131- Slip the shock on the upper mount and install a locking nut. DO NOT tighten down too tight on this nut or you'll bind up the shock. Squeeze the bottom end of the shock up and then slip the end down into the lower A-arm slot, with the flat side of the ball forward. Now, from the rear side of the A-arm slip the #6224 shock pin through the A-arm and through the shock ball end. Now, in the location where the arrow is pointing in the photo, install the long set screw until it locks the pin in place.

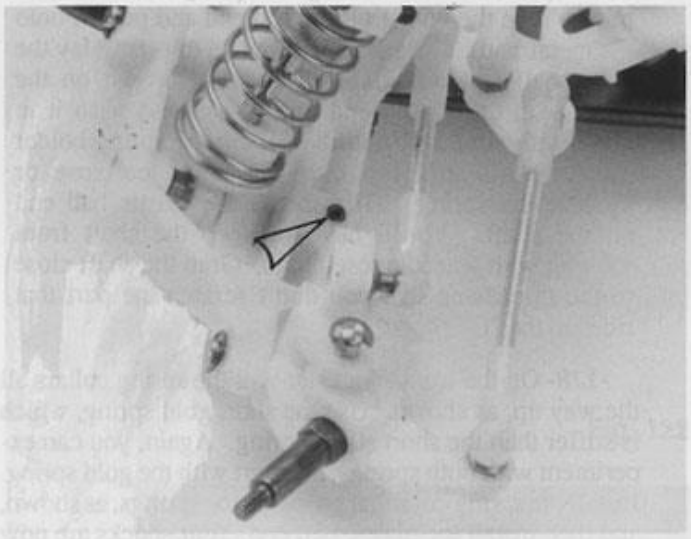


Fig. 131

-132- The lower installation should look like this.

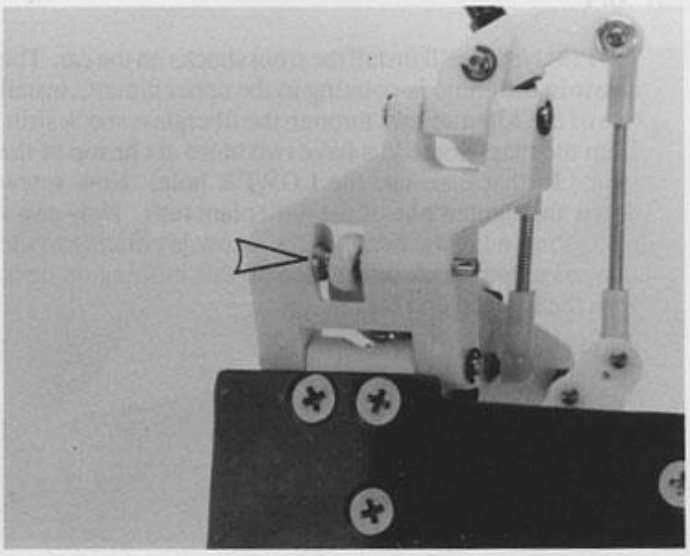


Fig. 132

-133- Install the R.H. shock.

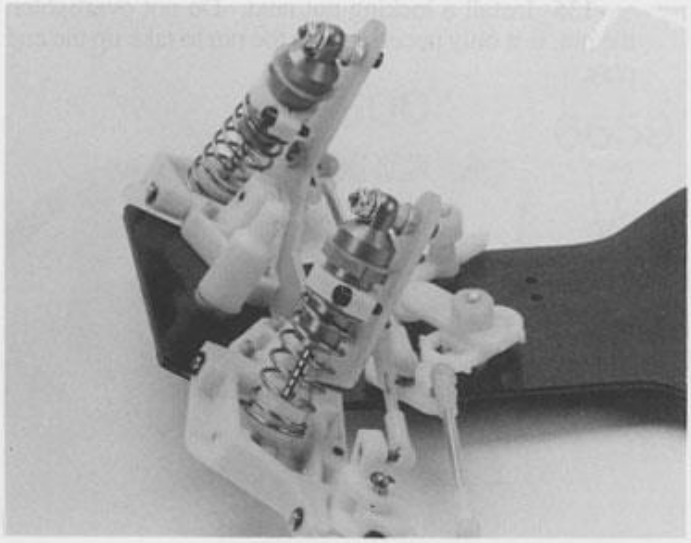


Fig. 133

-134- Also in bag #64 is the #6378 rear shock strut. Assemble this to the rear bulkhead with the 4 Allen screws, as shown.

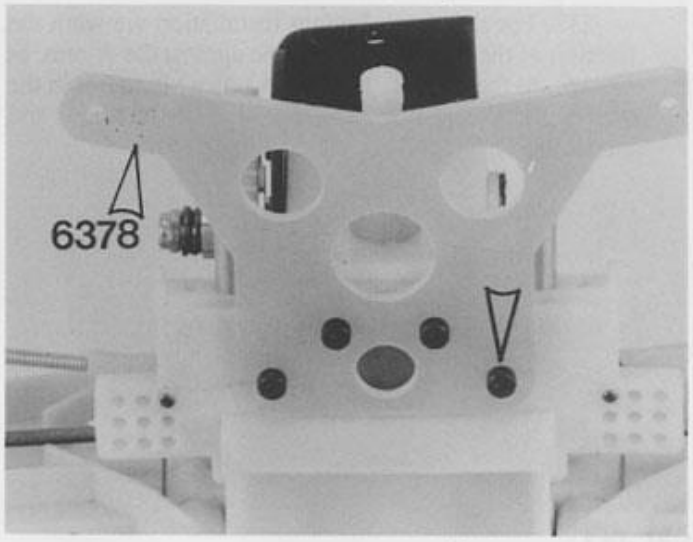


Fig. 134

-135- It's time to install the rear shocks. From bag #69, install one of the Allen screws through the fiberglass strut from the rear. If your kit has two shock mounting positions in the strut, ***use the inner most hole***. Then, install a plain nut and an aluminum washer next. Slip a bushing in the shock, with the flange forward, and slip the shock on the screw.

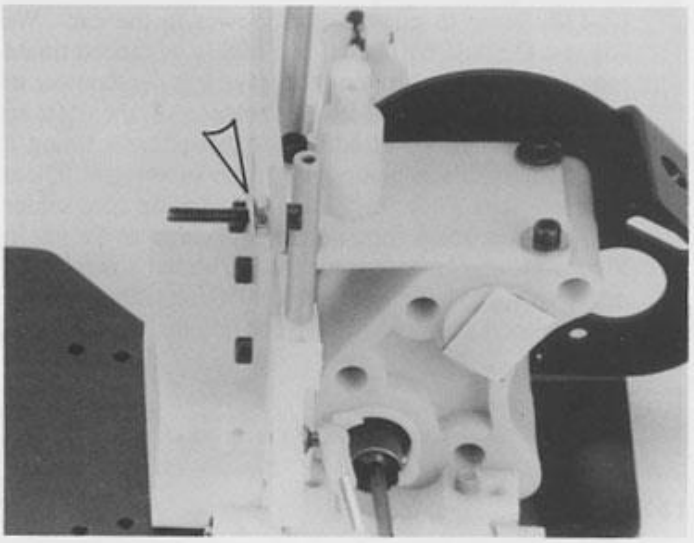


Fig. 135

-136- Install a locking nut next. Do not overtighten the nut, it is only necessary for the nut to take up the end play.

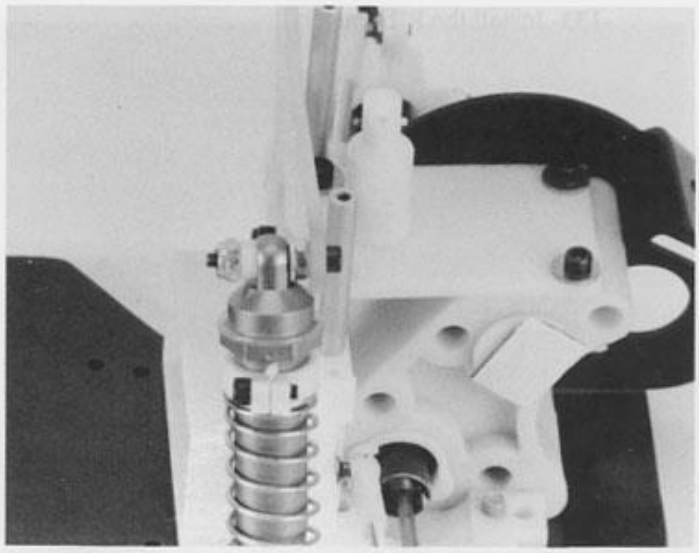


Fig. 136

-137- For the shock bottom installation we want the flat part of the metal ball end to be against the A-arm, as shown. In the A-arm, there are 4 holes. Install it in the outside hole, as shown. Slip a washer on the screw, and install the screw.

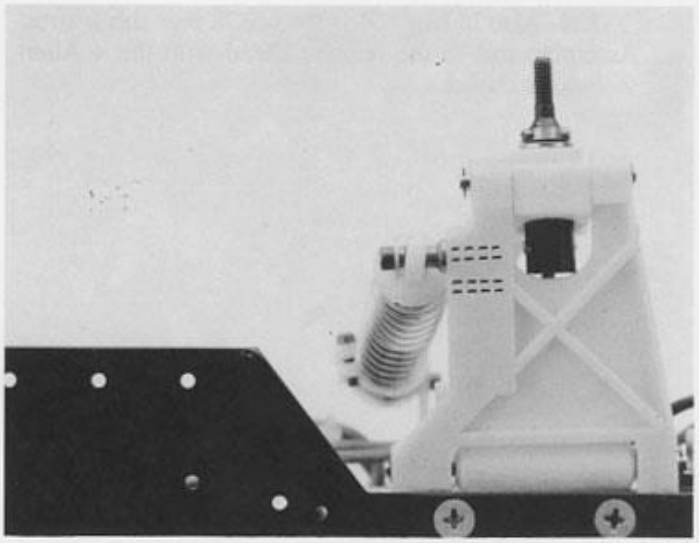


Fig. 137

MOTOR INSTALLATION

-138- Time to put the horsepower in the car. We suggest the ASC6502 as it is a highly advanced timed motor that's fully broken in to give top horsepower to your TQ10. Leads are already soldered to the 6502 so all you need to do is add filter capacitors. Using a small file, file the plating from the motor can where the capacitors solder on. Then, using rosin core solder or a separate rosin flux, solder capacitors as shown in Figure #138. Capacitors go from both the positive and negative sides directly to the can. Use plenty of heat to get a good solder joint to avoid failures.

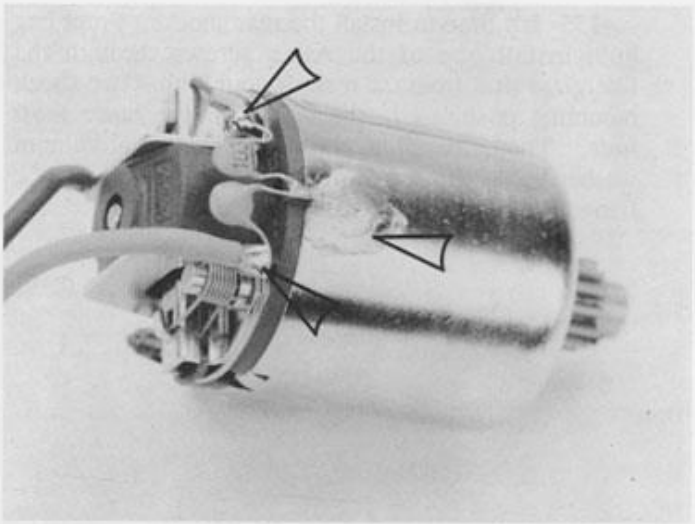


Fig. 138

-139- From bag #615, take the #6659 motor pinion and install the pinion, as shown. The end of the pinion should be even with the end of the shaft.

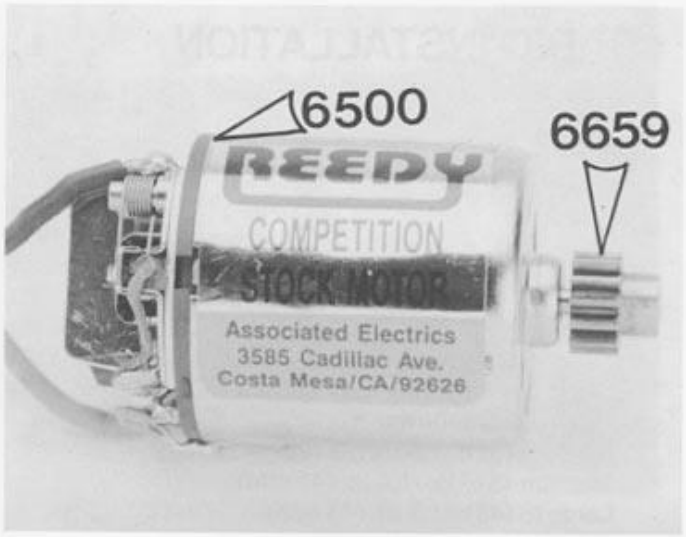


Fig. 139

-140- To mount your motor you'll need two short metric mounting screws available at your local dealer. These screws have finer threads and are only used to mount the motor. Slip the motor in the motor mount and start the bottom screw in first. Do not tighten all the way down yet. On the top screw, put a washer on the screw and screw it in, but not tight. Now we'll set the gear mesh. By moving the upper screw, forward or back, we'll be moving the motor closer to, or away from the plastic spur gear. What we want to do is to get the metal pinion gear as close to the plastic spur gear as we can without binding up the gears. The easy way to check this is to put your finger on the plastic gear and see if you can rock it in the teeth of the metal gear. The two gears should be as close as possible, while still being able to very slightly rock the plastic gear. When you have this correct spacing, tighten down on the two motor screws and re-check the gear spacing. An incorrect gear mesh can result in a huge power loss, so do it correctly.

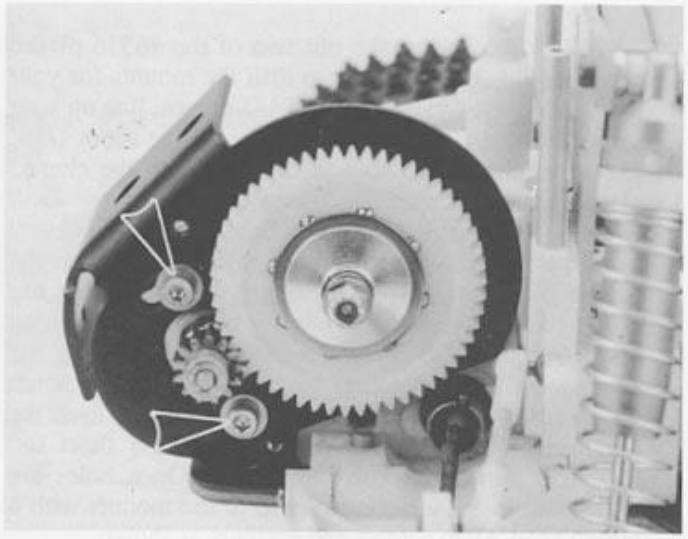


Fig. 140

-141- Now we'll install the #6608 dust cover, in bag #612. You'll have to trim the dust cover to fit, with a scissors. But we want the dust cover to fold over the edges of the motor mount as far as possible. So slip the dust cover on, see where you have to trim and only cut off as much as you have to until you can snap the cover on. When the cover is on, you'll notice two indentations in the plastic where the two screws go. If you take an Xacto knife and twist it as you push, you can cut the two mounting holes in the plastic, or you can use a drill. Install the two mounting screws with washers, as shown. **Caution:** To remove the motor, you must first remove the dust cover. You will then have 4 screws out that look the same. But if you mix up the dust cover screws with the motor screws, you will strip out the threads. Keep the motor screws with the motor, and the dust cover screws with the dust cover. Also, DO NOT try to use aluminum screws to attach the dust cover because they will break off in this installation.

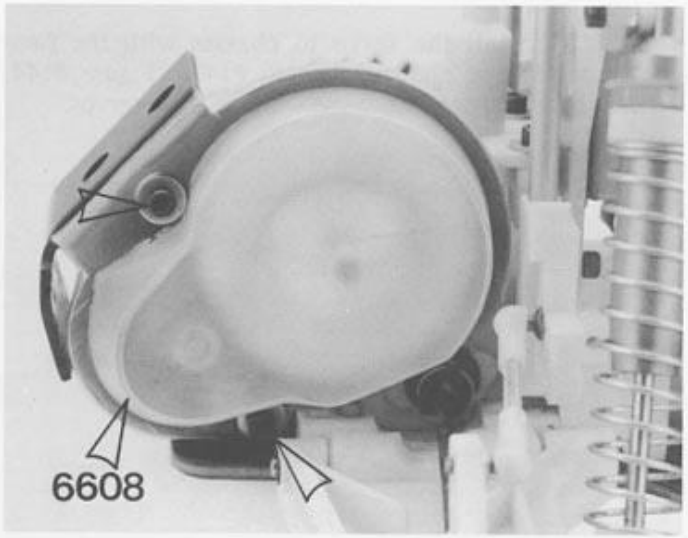


Fig. 141

RADIO INSTALLATION

We're ready to install the radio. If you haven't purchased a radio yet a good choice would be one of the 2-channel steering-wheel systems made by Futaba or Airtronics. However, many other radios including stick models, can be used in the car. The higher torque medium sized servos (like the S31, S131 or S148) are preferred for steering. The photos that follow show the installation of a Futaba system with FPS148 servos. In these instructions servo sizes (the width of the case between the mounting ears but not including the ears) are grouped as follows:

Small (S132): 1.5 in. (38 mm)
Medium (S131): 1.6 in. (41 mm)
Large (S148): 1.7 in. (43 mm)

STEERING SERVO

-142- In bag #66, take out two of the #6336 plastic servo mounts. You'll have to drill the mounts for your particular servos. If you have S148 servos, line up your servo with the mounts, so that there will be about 1/16" (1.6 mm) clearance between the servo and the chassis plate and mark the hole locations on the mounts. Drill two #43 (2.3 mm) holes in each mount on the side away from the chassis mounting hole, which will be on the bottom of the mount. You'll notice that the chassis has 2 sets of servo mounting holes, a short set and a long set. With the two different sets and by rotating the servo mounts 90 degrees, you will be able to mount most servos. For the S148 servo shown, we used the long set. For small servos we'll use the short set. Mediums will take experimentation. Once holes are drilled in blocks, attach the servo to the mounts with 4 button head Allen screws and washers as shown.

Fig. 142

-143- Install the servo to chassis with the two flathead screws shown in photo #142. Figure #144 shows the proper holes to use with the S148 servos.

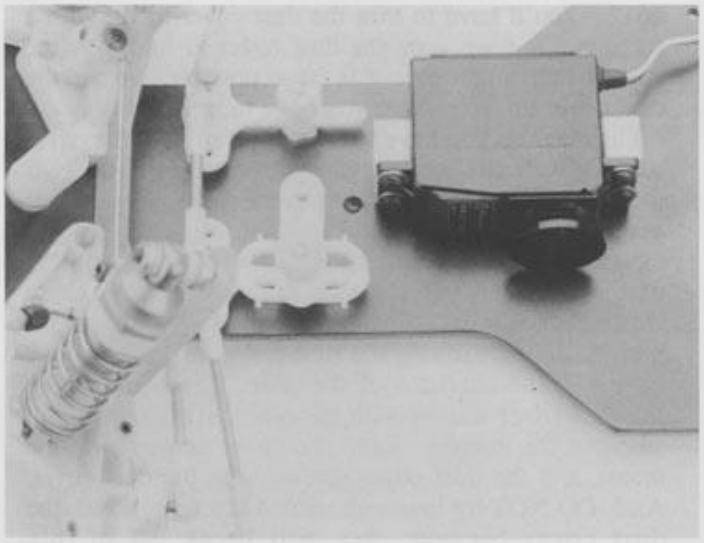


Fig. 143

-144- We've installed the S148 using the longer set of holes used for medium-large servos. The S132 size servos would use the shorter servo holes shown open here.

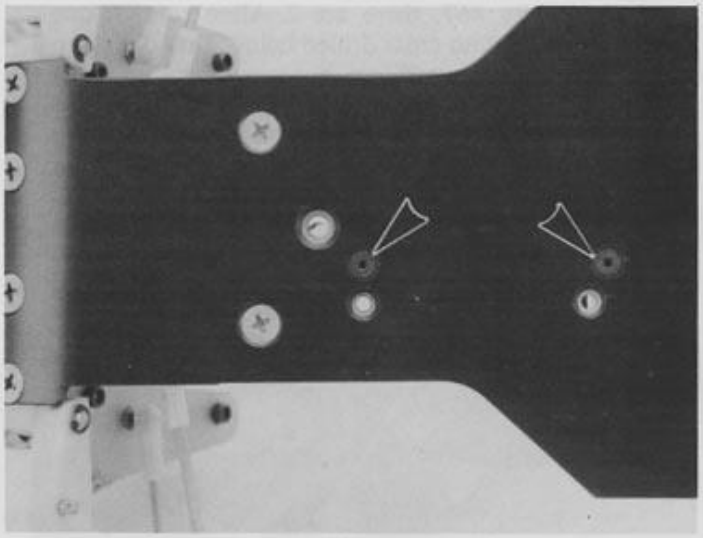


Fig. 144

-145- Out of bag #62, take the piano wire linkage and set collars. Turn the servo output arm to the left and right stops and then center the arm between these 2 stops. It will not be exact, but it will be close enough for now. We'll center it exactly with the radio later. Slip one of the "Z" bend arms in the servo arm, as shown. The "Z" bend arm will be easier to install in the servo saver arm if you take your Xacto knife and rotate it in the hole to bevel it slightly. The arrow in the photo is pointing to a slight bend that we want to put in this wire to help clear the collars from the servo. Put a slight bend in the arm and then slip it in the center hole, as shown. Center the servo saver and install and tighten both locking collars.

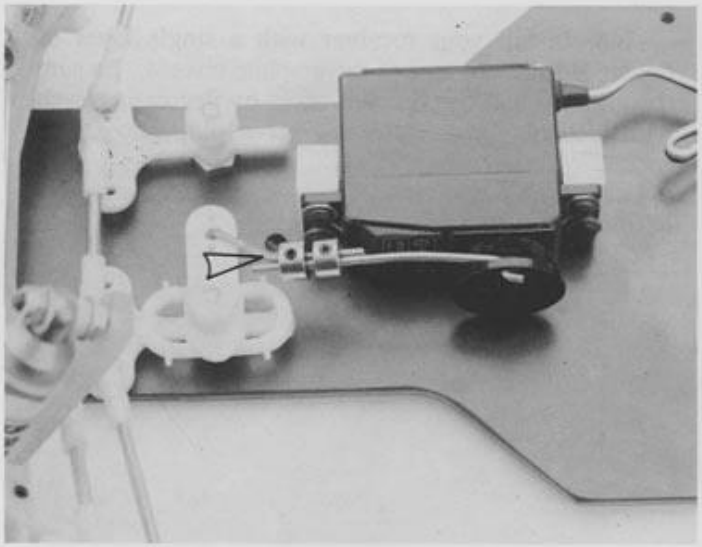


Fig. 145

-146- Install the #6334 battery tray to the chassis, from bag #67, as shown, with flathead screws.

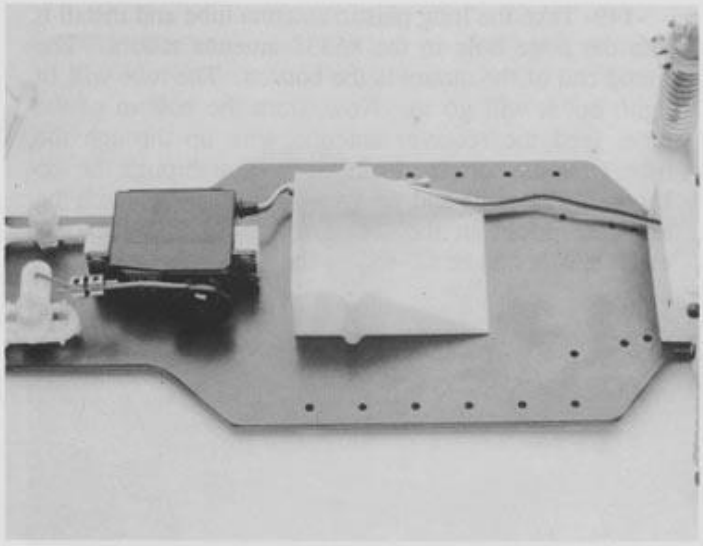


Fig. 146

-147- In bag #67, there are 2 Allen screws, one regular and one with cross drilled holes. Do not tighten the screws all the way down, but leave them up about .025 (65 mm). Slip your battery into place in the battery cup as shown. Take the battery strap and slip the keyhole over the normal Allen screw. Pull the forward end of the strap over the cross drilled Allen screw and lock into place with a body clip.

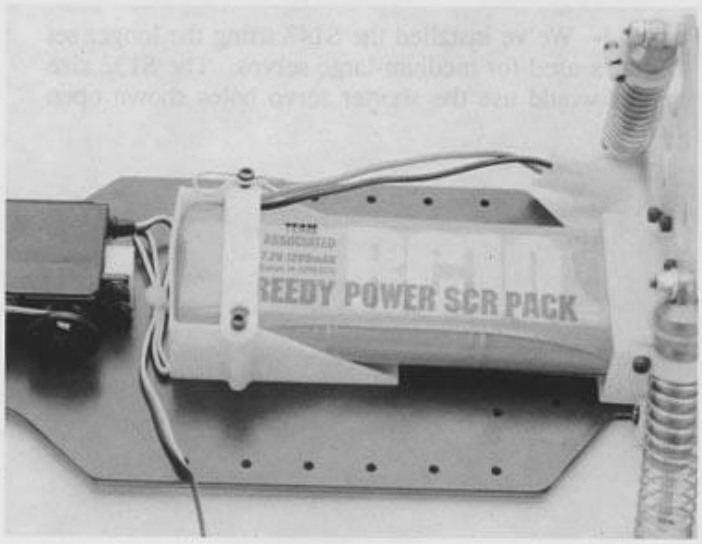


Fig. 147

-148- Install your receiver with a single layer of double sided foam tape to the graphite chassis. Be sure the graphite and receiver are clean by degreasing each with alcohol. Install steering servo plug into CH 1 socket.

Use a tie wrap to contain excess servo lead and tuck in front of battery cup.

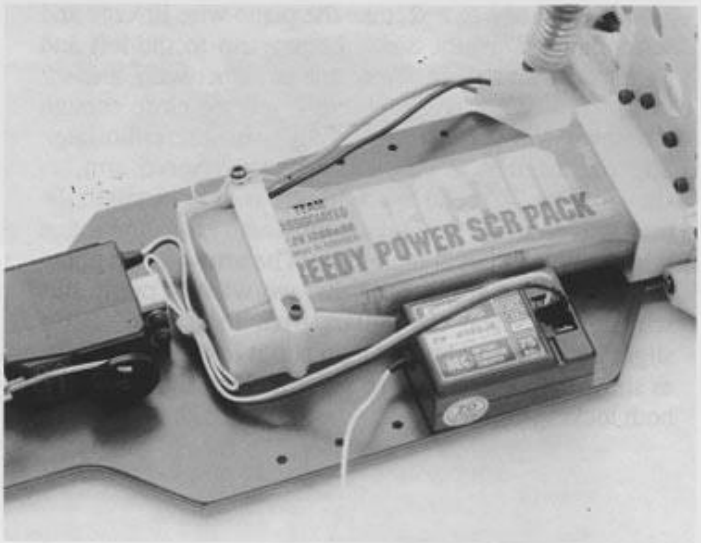


Fig. 148

-149- Take the long plastic antenna tube and install it into the large hole in the #6338 antenna mount. The round end of the mount is the bottom. The tube will fit tight, but it will go in. Now, from the bottom of the tube, feed the receiver antenna wire up through the tube, from the bottom. Push the wire up through the top about 1" (25 mm) and tie a knot in it. Now attach the antenna mount in the location shown. Any excess antenna wire can be stowed by the mount, as shown.

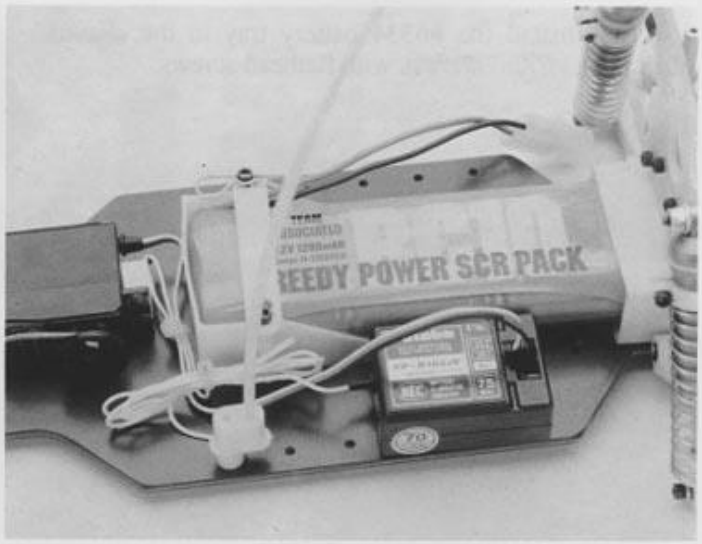


Fig. 149

-150- Mount your electronic speed control on the rear shock tower as shown. Use double sided tape as with the receiver. Tie wraps can be used to consolidate wiring for the neatest, most functional installation. The on-off switch can be placed in a variety of places. The Novak on-off switch has been placed in the right rear side of the graphite chassis.

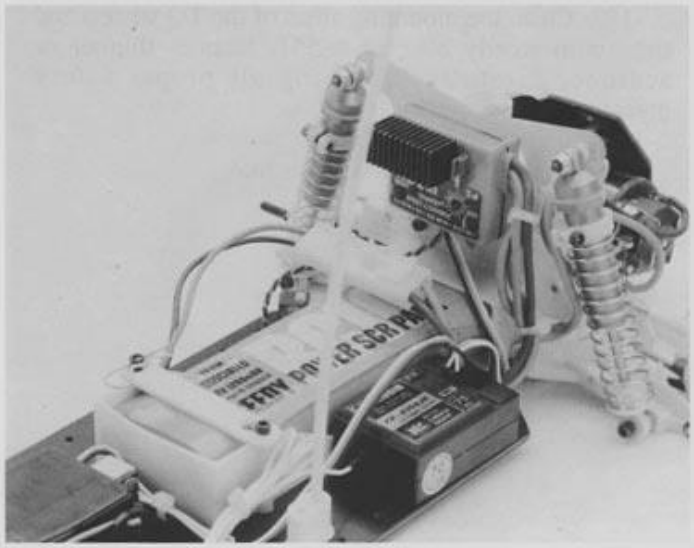


Fig. 150

-151- Plug the motor into the wiring socket, as shown, then tie a small tie wrap around the wiring socket and wing tube. This will keep the wires away from the tires.

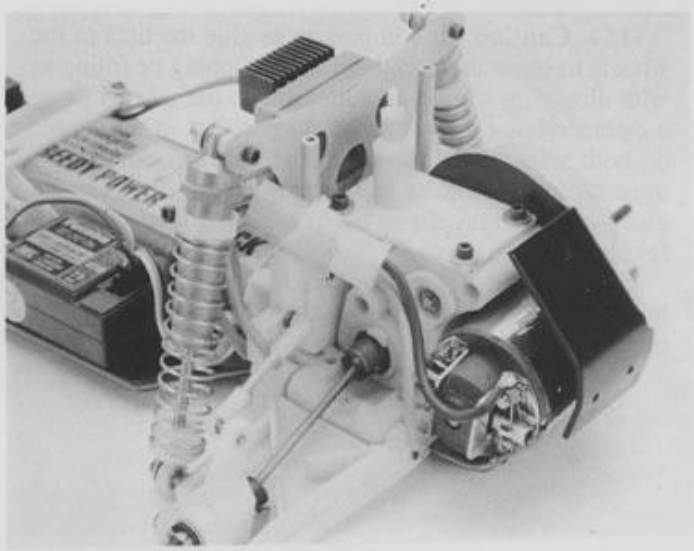


Fig. 151

-152- Locate the front wheel and tire.

Fig. 152

-153- Clean the mounting areas of the TQ wheels and tires with Reedy cleaner #6551, lacquer thinner or acetone, carefully following all proper safety precautions.

Insert the wheel inside the tire, as shown.

Spin the wheel to make sure it's true.

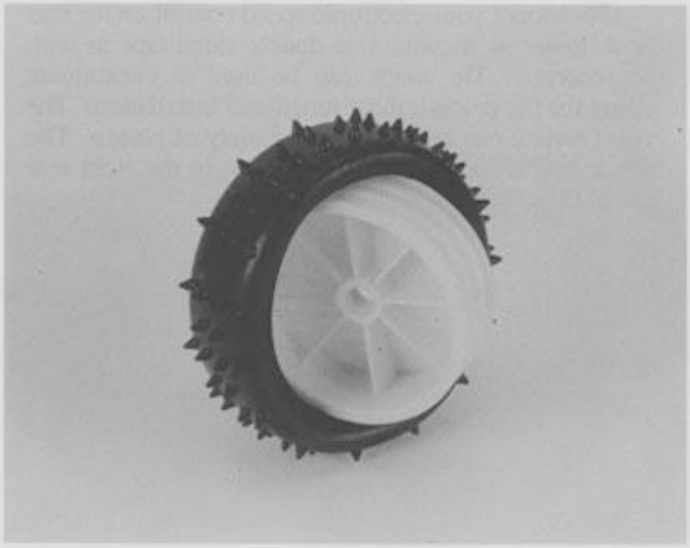


Fig. 153

-154- Caution: It's important to glue the tires to the wheels in order to keep them from slipping or filling in with dirt. You should glue the tires to the wheels using a cyanacrylate-type adhesive glued either in four spots on both sides of the tire or all the way around. If you must remove the tires from the wheels after they are glued on, you may do so by first boiling them in water for about five minutes.

We recommend cutting a small 1/8" hole on the inside wall of the tire for venting. This will keep the tire from flat spotting.

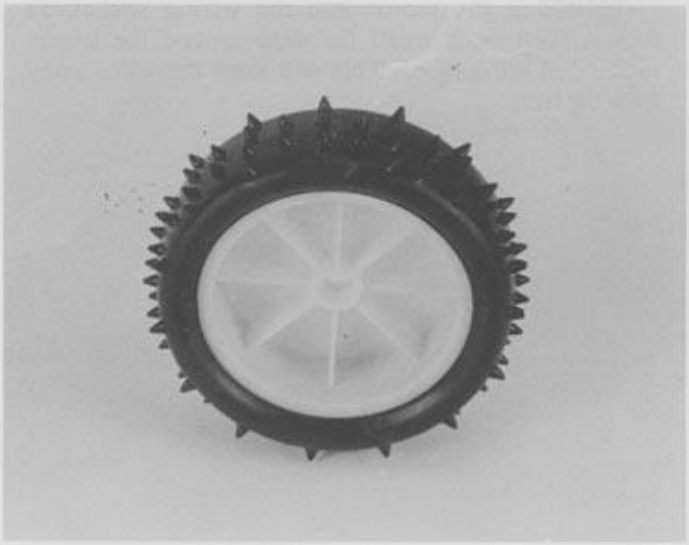


Fig. 154

-155- Use the same procedure with the rear tires and wheels.

Fig. 155

-156- Install front bushings (or bearings) as shown in Fig. #156.

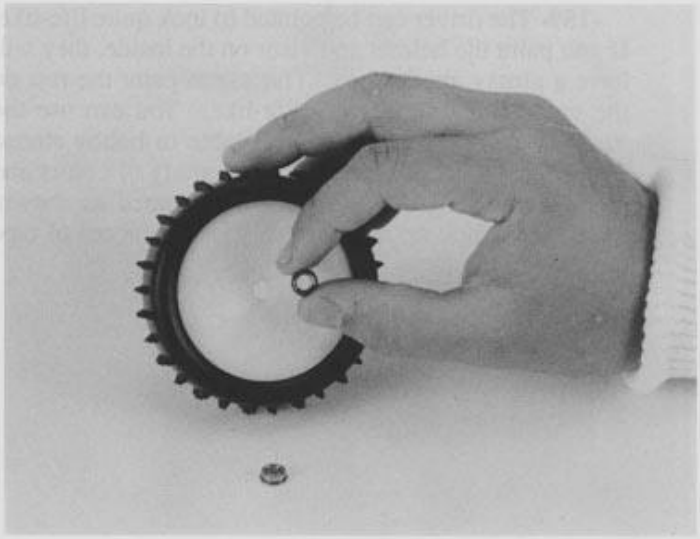


Fig. 156

-157- If you're using bushings, give them a light oiling and spin the wheels. They should spin true. If not, re-mount the tires. Then install the steel flat washer and the locknut on each wheel. Included in the front wheel bag is a small bag with 4 small plastic ball bearing adapters. These will allow you to use any 5x11 bearing size wheels and tires with your TQ10. Another hint, which will keep the dirt from sticking between the wheel and tire rim, is to run a small bead of ZAP adhesive on the outside of the tire by the wheel.

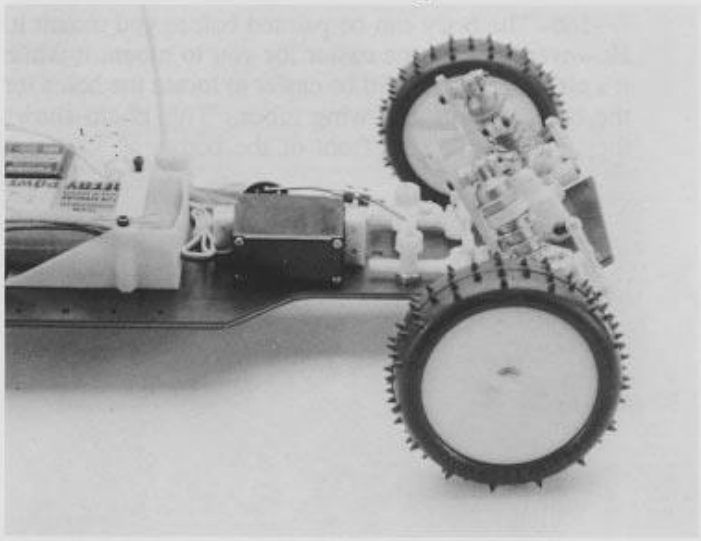


Fig. 157

-158- Screw on nylon wing nuts.

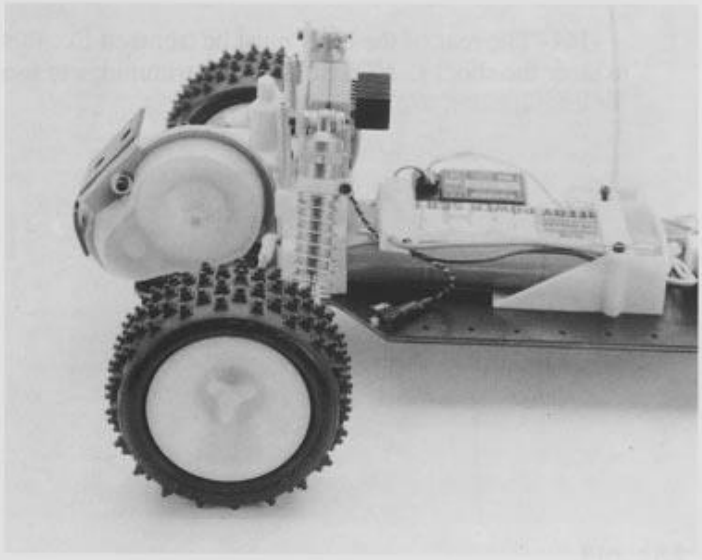


Fig. 158

-159- The driver can be painted to look quite life-like. If you paint the helmet and visor on the inside, they will have a glossy appearance. The if you paint the rest on the outside, it will be very life-like. You can use the small brush-on paint bottles available in hobby stores. Pactra's R/C Car paints come in a variety of colors and work great. The driver should be trimmed as shown, then it will slide up into the body, and 2 pieces of tape will hold it in place.

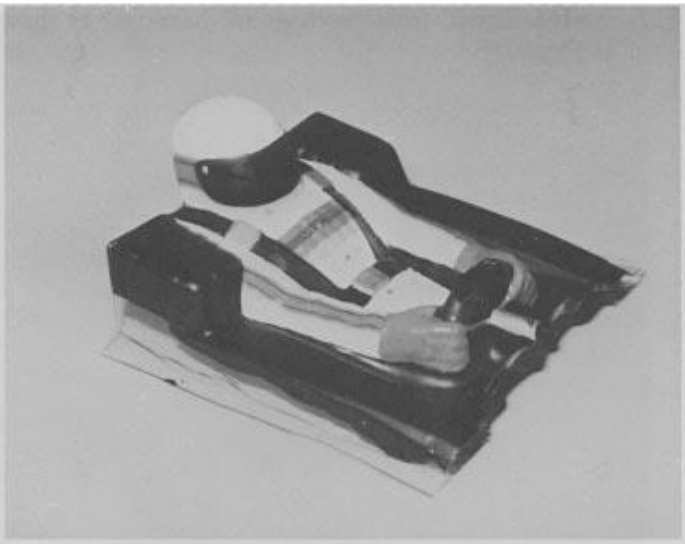


Fig. 159

-160- The body can be painted before you mount it. However, it might be easier for you to mount it while it's clear because it will be easier to locate the holes for the body mounts and wing tubes. This photo shows the trim lines for the front of the body and the front body mount hole.

Fig. 160

-161- The rear of the body must be trimmed like this to clear the shocks. NOTE: Save the trimmings to use for testing paint.

Fig. 161

-162- Trim a little of the body and slip it on. Keep trimming a little at a time until it clears the shocks. Cut out the body mount hole and the 2 wing tube holes. When you've got the body fitted, it's time to paint the body and wing. The body is painted on the inside and the wing is painted on the underside. There are 2 different ways to paint the body. By either brushing it on or spraying it on. The body is made of Lexan polycarbonate. In hobby shops, you can find special Lexan or polycarbonate paints made for these type bodies, to brush on. Pactra's spray or brush on "R/C Car Racing Finish" paints are available in a wide variety of colors and are specially formulated for R/C car use.

Fig. 162

-163- Now you'll have to figure out your paint scheme and mask the body off. Use vinyl automotive masking tapes such as McAllister's vinyl tape or Pactra's vinyl R/C car masking tape for best results. You always want to paint the darkest color first, and the lightest color last. So, in the case of this wing, the darkest color, which is toward the outside of the wing, would be painted first. This means the first thing you mask off is the section which will be painted white. The next section you mask off is the lightest color next to white and so on. After you've painted the darkest color, you peel off the next layer of masking tape and paint the next lighter color and so on. When you paint the body, put some masking tape on the outside of the body at the body mount holes and wing tube holes and at the shock cutout holes so the excess spray does not get on the outside of the body.

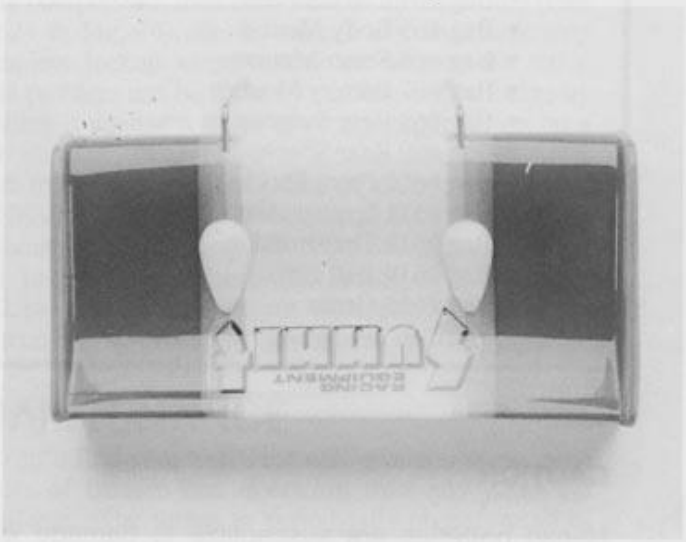


Fig. 163

-164- Mount the wing as shown in the instructions in the wing bag.

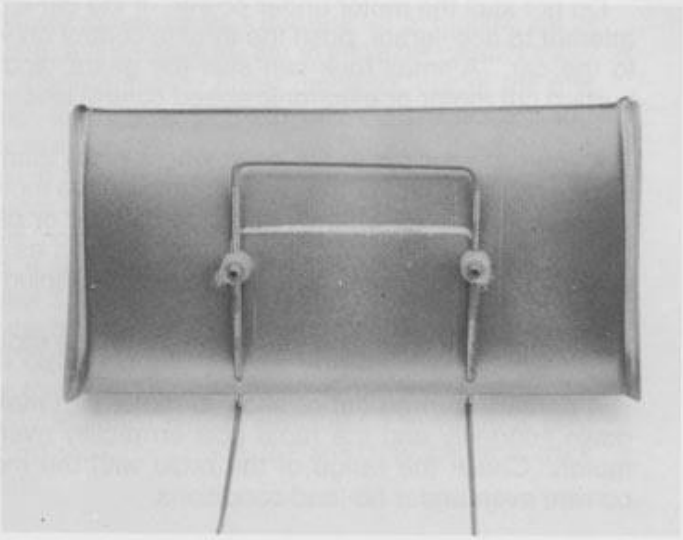


Fig. 164

-165- Mount the body and wing on the car and then pat yourself on the back. YOU DID FANTASTIC!

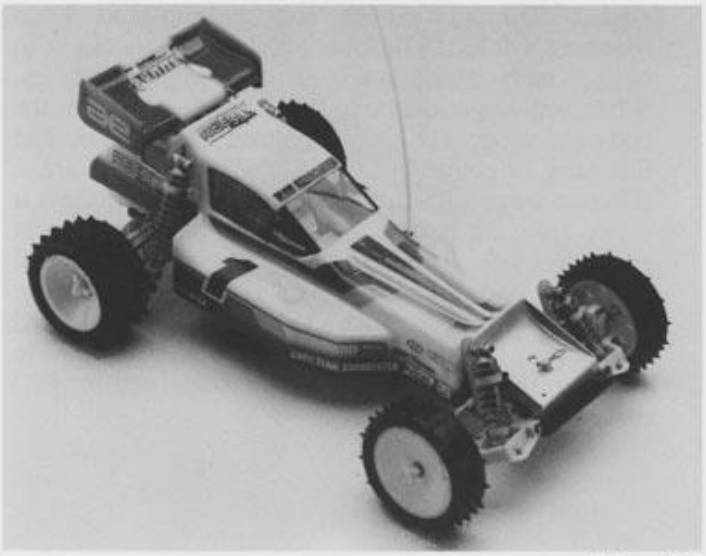


Fig. 165

TQ10 GRAPHITE RACER KIT PARTS LIST

- Chassis
- Rear Wheels/Tires
- Front Wheels/Tires
- Antenna Kit
- Diff Lube
- Shock Wrench/Ball Joint Tool
- Knock-Off Set
- Bag #61 Front Suspension
- Bag #62 Servo Saver
- Bag #63 Front Anti-roll Bar
- Bag #64 Chassis Parts
- Bag #65 Body Mounts
- Bag #66 Servo Mounts
- Bag #67 Battery Mounts
- Bag #68 Rear Suspension
- Bag #69 Rear Shocks
- Bag #610 Front Shocks
- Bag #611 Springs And Oil
- Bag #612 Transmission
- Bag #614 Ball Ends
- Bag #615 Gears

CAUTION

Ni-cad batteries are susceptible to damage when overcharged at a high rate and can release caustic chemicals if the overcharge is severe. Read the battery charging instructions in this manual before attempting to run your car.

Do not stall the motor under power. If the car stops suddenly on the track or fails to move forward when you attempt to accelerate, push the throttle control on your transmitter to the brake position immediately and attend to the car. A small rock can stall the gears, and if the throttle is left in the on position the result can be a burned out motor or electronic speed control unit.

If you run your car to the point where more than one cell in the pack is completely discharged, it is possible to lose radio control of the car before the drive motor stops completely. For this reason you should not operate your car in an area where it could be harmed or cause harm, such as near a busy roadway or a pool of water. Usually radio control will be regained as soon as you pick up the car and the motor is allowed to free-run. If you still don't have control, then you should unplug the motor.

When you stop running your car, turn off the radio at the car first before turning off the transmitter.

A partially burned-out or shorted motor can make the car appear to have radio problems. If the car slows down suddenly and the radio acts erratically even with a full battery charge, then the cause is probably the motor. Check the range of the radio with the motor unplugged. A shorted motor will draw extremely high current even under no-load conditions.

RACING YOUR TQ10

The first thing to do is to learn to drive the car, to the point that you're thoroughly familiar with how it handles. Only then can you start to make changes on the car and be sharp enough to tell exactly how each change affects the car.

Things to try - You can change the dampening of the car by changing the oil in the shocks. 30V oil will make the shocks a little harder to actuate. 40W is getting near the maximum to try. Your kit contains 2 different sets of springs to try on your track. Each off- road track is different. So the object is to find the ideal combination of springs, dampening, ride height, gearing, cambers, wing, etc. The racer who comes the closest to the ideal combination for his track, will have the easiest car to drive, which will give him the best chance to win.

Oval racing - Because the TQ10 chassis is fully race tune-able, it can be adjusted to give ultimate oval track performance. Springs, dampening, ride height, wings and especially camber, can be adjusted to an ideal oval combination. Try giving the front and rear outside wheels up to 10 degrees of increased camber.

Differential adjustment - The limited-slip (VariLok) ball differential on your TQ10 works just like the diff on the full sized car. It allows the outside rear wheel to turn slightly faster than the inside when the car is cornering. The limited-slip feature prevents that wheel from turning too fast when cornering under power.

You can make sure the diff on your car is working properly by doing the following: Remove the gear dust cover. Lift the rear of the car off the ground with your left hand and press your thumb against the teeth of the large plastic gear to prevent it from turning. Now turn the right rear wheel with your other hand. The wheel should turn easily, and the OTHER wheel should turn in the opposite direction as you do it. A well set up diff will act the same way even if you don't hold the large gear from turning; just the drag of the motor should be enough to hold it.

Now place the car on the ground and push down on the rear end to compress the suspension. While holding the car in this position, try to turn the large gear with your thumb. It should be nearly impossible to turn the gear, and if it does turn, the wheels should turn with it.

If your diff isn't working properly and adjustment of the diff nut doesn't fix it, then remove diff nut, spring, hub, drive rings and large gear. Now you can make two checks: lift the car and make sure that both rear wheels will spin freely. Next, grab hold of the inner diff hub (the aluminum thing you just took the gear off of) and try to turn it while holding the RIGHT wheel. There should be no slippage. Now temporarily slide the outer diff hub back on the diff shaft and try to turn it while holding the LEFT rear wheel. Again there should be no slippage. If you can pass these tests then you can be pretty sure that the gears are not slipping or binding inside the transmission.

Next, clean, regrease and reassemble the parts you removed. Make sure that the large gear turns freely on the inner diff hub as you put it together.

Locking the diff - In some situations you might want to lock the diff completely. To do this, simply remove the diff balls from the large gear, wipe off the grease from the gear and drive rings and reassemble as usual, but without the balls. Tighten the nut all the way down to the point where the spring is almost fully compressed.

If the diff fails to lock up, even when the spring is fully compressed, then the inside of the outer hub (Part #6624 in Fig. 76) may be bulged slightly, preventing complete lockup when assembled without the balls. This problem can be fixed by sanding off the bulge by rubbing it against a piece of emery paper laying on a flat surface. (The bulge is on the side OPPOSITE from the spring cup...don't sand off the spring cup!)

NEVER attempt to lock the diff by assembling without the spring, and DO NOT overtighten the diff nut to the point where the spring is completely collapsed. A certain amount of slippage under impact is necessary to protect the gears from damage.

MAINTENANCE

You'll find your TQ10 car will give you many more hours of trouble-free operation than any other car available. The things to periodically check are all of the moving parts. Front and rear "A" arms, steering block, steering linkage, shocks etc. If any of these should get any dirt in them and start sticking, it will greatly affect how the car handles.

Motor maintenance - Because we're running out in the dirt, it is possible for dirt to make the brushes stick. So, if you're having motor problems, one of the first things to check is to make sure the brushes are still able to move freely in the brush holders. If you've run enough to wear them out, Associated has replacement brushes available. An item which will give you a little more power and make the brushes and commutator last much longer, is Associated's Reedy-in-a-Can Power Spray #6550. Simply spray a short burst of this on the brushes and commutator before you run, and it will clean and lubricate the brushes and commutator. For those of you who want more power, there are Reedy Modified motors available. The #6510 is used for off-road tracks and the #6511 is for oval track racing.

RADIO PROBLEMS

A radio problem is not always caused by the radio. Often it is the result of a combination of factors that can include motor noise, poor electrical connections or layout, reversed or defective crystals, week transmitter battery, etc. If your radio problems persist one or all of the following may help:

- Make sure your motor noise capacitors are properly installed.
- Make sure the brushes are free in their brush holders and are not arcing.
- Try a different frequency.
- Try a different motor.
- Lengthen your receiver antenna and/or raise the antenna mount up to the rear shock strut.
- Mount the receiver on the shock strut. Dress the radio wires well away from the power leads of the motor.
- Use a separate battery pack for the radio. (See section on separate packs.)

Note also that 75mhz radios and electronic speed controls are more susceptable to interference. Large metal objects such as chain-link fences, light poles, cars, vans or trailers parked near the track can cause local interference particularly on 75mhz.

SELECTING A SPEED CONTROL

There are many electronic speed controls on the market for your TQ10. Novak's Tempfet 4 is an excellent choice as it is dust and dirt resistant, very efficient, small, lightweight and fully prewired to work with the Associated SCR battery (ASC6776) and stock motor (ASC6502). It's easy to adjust with it's excellent instructions, and its special circuitry will shut off power to the motor to prevent failure should you inadvertently stall the motor.

CHARGING BATTERIES

It is important to understand the characteristics of the battery pack in your car because how you use it will greatly affect both its performance and life. With proper care, your pack will perform well for many hundreds of cycles.

To race in competition, you must use a R.O.A.R. legal battery that is composed of six "sub C" size cells.

CHOOSING A PACK

There are many different types, brands and styles of batteries available in the market today.

Our suggestion, for stock class racing and general purpose running, is that you choose a 6 cell Sanyo SCR pack. The Associated # 6776 pack uses SCR cells and is perfect for stock racing.

The SCR cell is especially well suited for stock class racing for a variety of reasons:

1. SCR batteries put out very high voltage, giving the highest possible speeds.
2. Total capacity of an SCR pack is more than adequate to complete a stock class race. R.O.A.R. rules limit races to 4 minutes in length. Your TQ10, with a properly prepared motor and chassis, will run for approximately 5-8 minutes under most race conditions. Therefore, you will not see any benefit by using any higher capacity battery than an SCR-type. In fact, using a high-capacity SCE battery could be detrimental to your stock class racing because these cells do not have as high of output as SCR's. The reason SCE's are used by top modified drivers is that in modified events, motors draw more amperage than stock motors so capacity is equally important to voltage.
3. SCR cells are very "rugged" and are designed for fast charge rates and discharge.

Matched packs: Matched cells are more expensive than unmatched because each cell is tested for capacity and grouped with other cells of similar capacity. The purpose is to weed out low capacity cells with the purpose of creating a higher capacity pack. As mentioned before, in the stock class, capacity is not an issue and, therefore, matched batteries are unnecessary to stock class drivers.

If your car fails to make a 4 minute race, it's because you have a bind in the drive train, a bad cell in the battery, didn't fully charge the battery, carbon is built up on brushes or some other problem that needs to be addressed other than spending money on matched batteries.

CHARGERS

There are many timed chargers and peak detector chargers on the market that your dealer can show you features of. AC/DC timed chargers are very popular because you can change your SCR pack from both household AC current or your 12 volt automobile battery.

Peak detector chargers are more expensive because they utilize complex circuitry to detect the end of a battery's charge, when the voltage has reached its peak and it will no longer accept any more charge. A peak detector charger will automatically shut off its charge at this point and drop to a trickle, thus eliminating undercharged and overcharged batteries.

OVERCHARGE

There is no way to make a nicad cell accept more charge than it is designed to hold. This means that as the cell approaches a fully charged condition the portion

of charging current not being stored becomes heat and pressure. If charging continues after the cell is fully charged, all of the current is converted to heat and pressure - about 40 watts worth - or the equivalent of the heat produced by an average soldering iron. High temperature and pressure is harmful to the cells, so overcharging should be avoided.

Nicad cells have a built-in process for recombining the accumulated gas (actually oxygen) produced by overcharge, but the process produces heat and takes a lot of time. If you overcharge your battery and it seems to take a long time to cool down, it's because this pressure reducing reaction is taking place. Once the gas is recombined, the temperature drops.

HOW TO TELL WHEN YOU'RE CHARGED

One of the problems with nicads is their inherent voltage stability; the voltage of a fully charged cell is not much different from one that's about dead. For that reason several indicators, along with some common sense, are needed in order to get the most out of your battery. The following is a list of indications you can use to detect full charge.

Temperature Method - This works well if you start with a cool battery pack. As the pack charges, frequently check its temperature by feeling the cells directly. As soon as you notice an increase in temperature, stop charging. If the cells become too hot to hold on to, you are overcharged. Let them cool.

Timed Charge Method - This only works if you have confidence in the timing accuracy of your charger. Many chargers on the market only approximate a constant charging current; they may vary from six amps when you first start charging all the way down to two amps if the nicad pack is nearly charged and the voltage of the charging source (automobile battery) is low. If the charging current varies, it becomes difficult to estimate the average current. However, if your charger is reasonably dependable you can use the following method.

Charge your pack using the temperature method and keep track of the time required to reach full charge. Once you have established the time you can use it as a setting for the timer on your charger. To be safe use a setting about a minute less than what you established. This method allows you to charge without constantly monitoring the battery temperature.

Voltage Method - Voltage is a poor indication of a cell's state of charge. Things like temperature, current drain and "cell memory" have as much an effect on voltage as the state of charge does. However, it is possible to see the cell voltage gradually climb during the charging process. The absolute value of this voltage isn't much use, but how the voltage changes is an excellent indication. To use this method you will need a digital voltmeter.

Connect the voltmeter across the nicad pack, preferably right at the cell terminals or, if that's not possible, across the terminals of the throttle control resistor. Don't try to read the voltage at the output of the charger because you'll end up reading the voltage drop through all t he connectors and cables between the charger and the nicad pack; and that can sometimes mask the effect you're looking for. You should start with a nicad pack that is less than 1/2 charged. Connect your charger and begin charging at four amps. If your charger is adjustable set the current now, but don't try to change it later. A constant current charger is preferable here, but if yours gradually drops off during charge, that's okay; as long as it doesn't drop below three amps.

Watch the voltage as the pack charges. Notice that the voltage climbs rapidly at first, and then very slowly in the middle of the charging cycle. This voltage will most likely be in the range of 8 1/2 to 9 volts for a six cell pack. As the pack approaches full charge, the voltage will begin to climb more rapidly; and as it goes into overcharge the climb will slow down and stop. This is where you stop charging: at the point where the voltage stops climbing. If you left the charger on, the voltage would begin to fall as the pack went deeply into overcharge and started to heat up. The maximum voltage reached will probably be in the nine to ten volt region; the actual value is unimportant.

Trickle Charge Method - Slow or "overnight" charging is a method you are not likely to use often. It is a good way to bring the pack to absolutely full charge. However, the output voltage of a trickle charged pack is slightly lower.

Getting Maximum Performance - The paragraphs that follow are really for the benefit of serious racers. If you're just out having fun, don't worry about it.

Full Discharge - Nicad packs perform best if they are completely discharged before they are charged. If you are involved in racing, you will have to do this if you expect to win any races! Some chargers have a discharge function and various clip-on discharge resistors (about 30 ohms, 10 watts) are available at hobby stores. Discharge for at least an hour (preferably overnight with a clip-on resistor) before charging.

Topping-up can give you a little extra voltage at the beginning of a race, as long as you don't overdo it. Put the last minute or two of charge into your pack just before the race starts.

ROLL BAR INSTALLATION (Optional)

Under some types of track conditions you may find it advantageous to use the anti-roll bar supplied with this kit (Bag #63).

-1- Install a ball in the front left lower "A" arm in the location shown in Fig #1. Now install the R.H. ball.

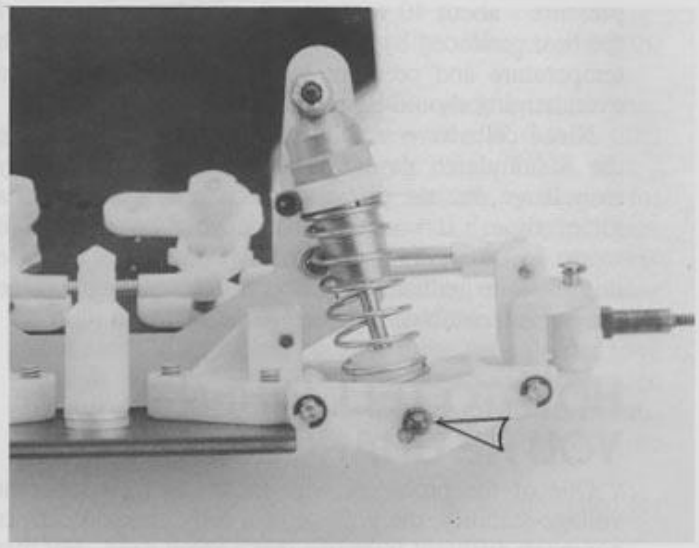


Fig. 1

-2- Using needle nose pliers, carefully bend the anti-roll bar wire (#6201) as shown in the template in Fig. #2.

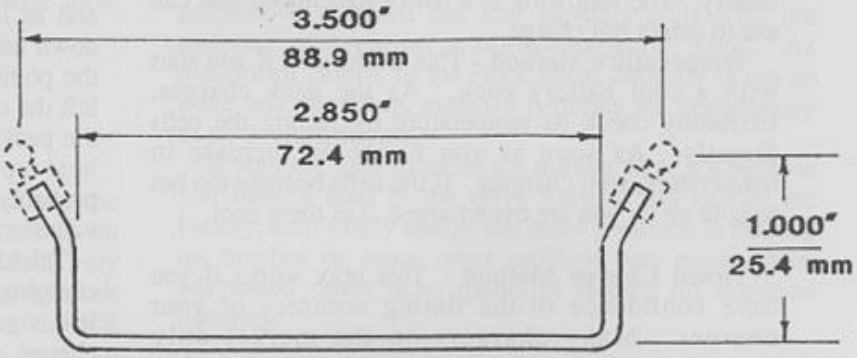


Fig. 2

-3- Solder the ball rod ends on the anti-roll bar wire as shown in Fig. #3. Use plenty of flux and heat to assure a good bond. Now screw the plastic ball ends down so they touch each other on the threaded rod. This can be done easier if you cut about 1/4" (6.35mm) off the rod to shorten it.

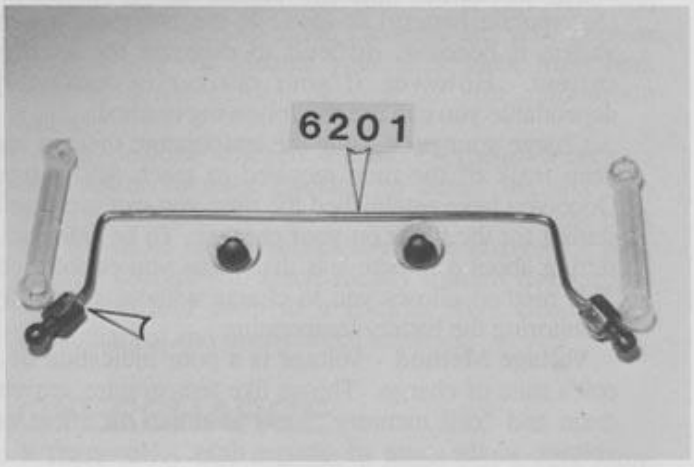


Fig. 3

-4- Set the anti-roll bar in place and locate it with the 2 button head allen screws and washers.

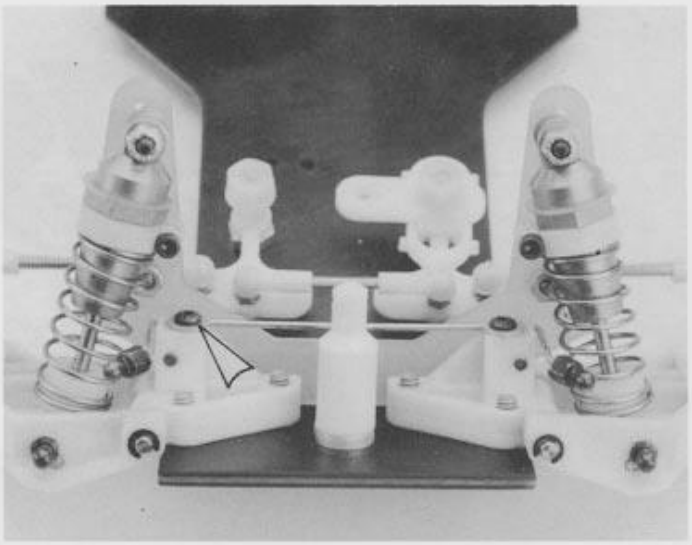


Fig. 4

-5- Now snap on the 2 plastic rod ends as shown in Fig. #5. Check that the anti-roll bar has ample clearance from the shock springs. Rebend if necessary.

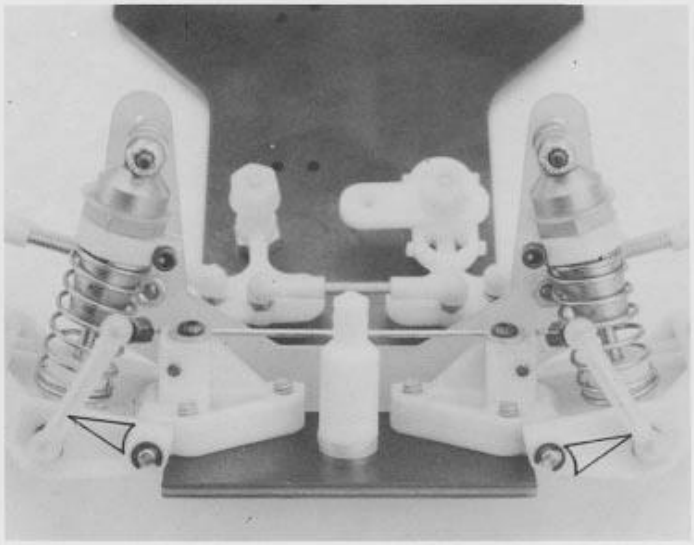
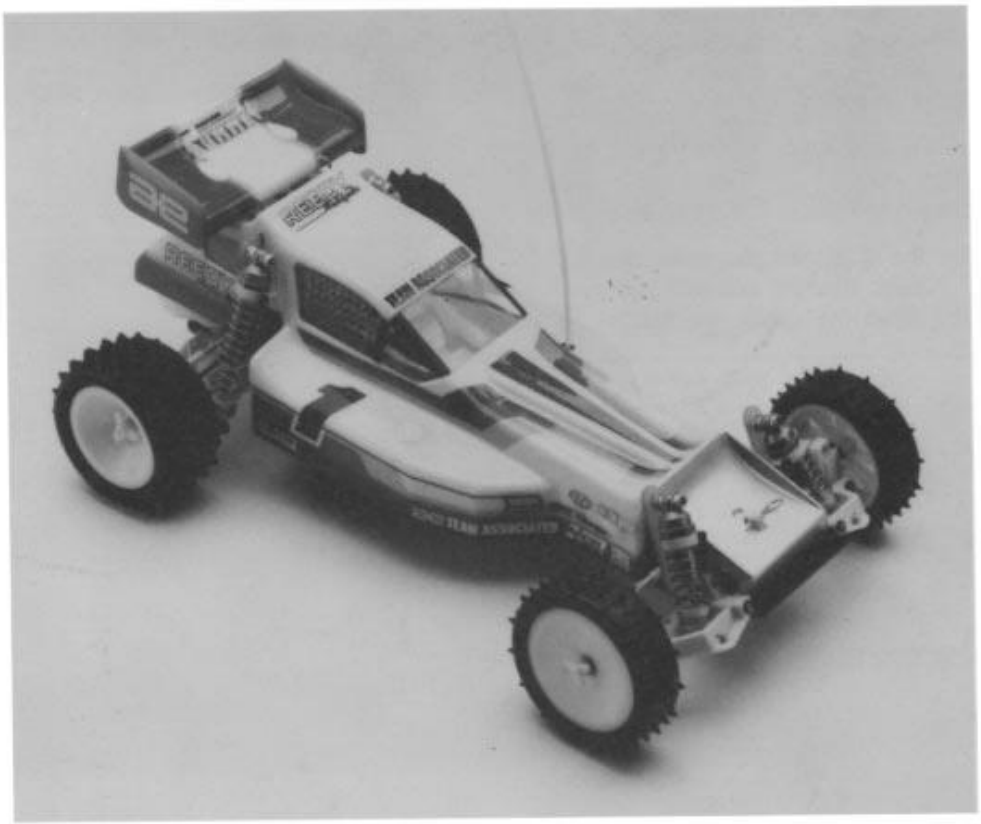


Fig. 5

TQ10 graphite



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